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**BROAD-BASED EQUITY COMPENSATION AND FIRM PERFORMANCE: EMPIRICAL
EVIDENCE FROM U.S. LISTED COMPANIES**

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<p>Abstract</p> <p>The amount of compensation received by people plays an influential role in determining their commitment to work which in the long run affects performances of companies. There are different types of compensation systems and equity-based compensation is one of such which is supposed to help align the interest of agent and the principal. This study was conducted to analyse how broad-based equity compensation affects performances of selected listed firms in the U.S. On one hand, two proxies were used for firm performance measures: namely Return on Assets (ROA) and Tobin's Q representing accounting and market-based performance measures respectively. On the other hand, fair value of stock options granted was used as proxy for broad-based equity compensation.</p> <p>A total of 2064 firm year observations were used in conducting the analysis covering the period from 2011 to 2015. The results of the study supported one of the hypotheses while the other was not supported as far as the impact of stock options granted on firm performances is concerned. Fair value of stock options granted was found to have a positive impact on firms' accounting performances measured by ROA but was found to have a negative impact on market-based performance measured by Tobin's Q. The results of this study concur with several other studies and also confirmed that, other firm characteristics such as firm size, leverage, liquidity, growth opportunities and firm age can equally affect performances of firms.</p> <p>The results of this study have relevant implications for management, shareholders, employees and all interested parties in corporate governance. The results will help all these stakeholders in making informed decisions when approving the adoption of broad-based equity compensation plans for listed companies.</p>			
Keywords Equity compensation, Return on Assets, Tobin's Q, firm performance, fair value, stock options			

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1 INTRODUCTION

1.1 Background

Organisations are regarded as legal entities which are separate and distinct from the owners. Every organisation exists to serve one purpose or the other. As artificial human beings, organisations are run by the third factor of production which is labour. The success or failure of which depends on a number of factors and one of such is the behaviour of people who work in the organisation because every organisation is as good as the people who work within (Mullins,2010).

Organisational behaviour is regarded as the study of different patterns of both group and individual behaviour and the structure of the organisation within which they work with the objective of improving the performance of the organisations (Mullins, 2010, p.3). Being able to influence behaviour of people is very key in ensuring that, their actions lead to the achievement of organisational objectives.

There are different ways of influencing the behaviour of employees to enable them work towards the desired organisational objectives. One of the means of influencing the behaviour of employees in any organisation regardless of the size, industry or geographic location is by means of compensation. Mullins (2010, p.181) defines compensation as the reward given to labour (employee) for the time and efforts made towards achieving a given output. A number of theories exist as to what really constitutes a compensation system that addresses a number of factors peculiar to organisations such as business strategy, national culture and competitive environment (Gerhart, Minkoff & Olsen 1995). Individual employee behaviour within an organisation is influenced by three theories of compensation which are reinforcement and expectancy theory, equity theory and agency theory (Gerhart, Minkoff & Olsen, 1995).

Reinforcement theory simply means that, a behaviour that is recognized and rewarded will be repeated by the employee, in the same way, a behaviour that is not recognized and rewarded will hardly be repeated. This implies that, the reward will trigger a reaction from the employee. Very close to the reinforcement theory is the

expectancy theory, which focuses on anticipated rather than the reward that has already been benefitted by the employee. Equity theory also focuses on what employees deem to be fair as their reward for their contribution to the organisation in comparison with their peers within and outside the organisation (Adams, 1963). Thus, when employees feel they are not treated fairly, they will resort to various actions to resolve the perceived inequity within the organisation. A rather recent theory is the agency theory which sees the organisation as an entity made up of different stakeholders with different expectations as well as how employee compensations could be used to align the interests and expectations of the many different stakeholders (Fama & Jensen, 1983).

The third theory came about due to the separation of ownership of organisations from control. This separation of ownership and control is what leads to agency costs. Agency costs are the costs that arise out of agency relationships (Gerhart et al, 1995). Lambert and Larcker (1989) cited typical examples of agency costs as business acquisitions that do not result in value creation, popularly known as empire building, expensive spending on perquisites such as club membership, luxury cars and chauffeurs. It is equally worthy to note that, agency cost increases in proportion to the level of difference existing between management and shareholder attitudes towards risks. For instance, while shareholders are interested in long term firm performance that enhances stock values, managers may be interested in short term results that gives them higher salaries, especially when they (managers) do not want to stay with the company for long. Agency theory cannot be viewed from the standpoint of managers and shareholders only, but also covers relationship between management and lower level employees (Gerhart et al., 1995). In this vein, managers could assume the role of principal in an employment relationship with lower level employees. By so doing, the managers can also focus on an employment contract and for that matter, compensation schemes that matches managerial interests with that of the non-managers. In such contractual relationships, the compensation schemes could be designed as behavior-based or outcome-based (Gerhart et al., 1995). Examples of behavior-based compensation is merit pay while others such as stock options, commission-based pay among others qualify for outcome-based schemes.

There has also been a recent development particularly in the field of human resource management towards what is known as group-based compensation and individual compensation programmes. Dyer and Blancero (1992) predicted the dwindling of individual performance-based compensation and increase in group-based performance compensation. Individual performance-based compensation includes schemes such as bonuses while programmes such as stock plans, profit sharing among others fall under group-based compensation programmes. Individual variable pay programmes encourage selfish interest maximisation while group compensation policies encourage organisation-wide performance (Gerhart et al., 1995).

Organisations do not exist to achieve individual but collective objectives, that is why empirical evidence supports the wide application of group-based compensation schemes. Because, organisations that adopt group-based compensations record higher productivity per person than organisations that adopt individual-based compensation programmes (Weitzman & Kruse, 1990). One of the group-based compensation programmes that has gained increased popularity is the equity-based compensation.

1.2 Research problem

Indeed, a significant number of past researchers have provided empirical evidence in their studies in examining the relationship that exist between equity-based compensation systems and firm performances. Some research results point to the fact that such compensation schemes impact positively on firm performances while others show otherwise. Empirical evidence on the impact of equity-based compensation on firm performance still remains mixed and limited (Ittner et al.2001). For example, while DeFusco, Johnson and Zorn (1990) find a positive relationship between stock option compensation and stock prices of adopting companies, Aboody (1996) finds a negative relationship between employee stock option programmes and stock prices of adopting companies. In another dimension, Watson Wyatt Worldwide (1998) concluded that, firms either offer too high or too little equity compensation, especially stock options to employees leading to lower returns to shareholders as compared to firms that offer stock options at the equilibrium.

This current study will help contribute towards the existing knowledge on whether broad-based adoption of equity-based compensation plans affect company performance positively in the U.S. To be able to address this issue, the main research question to be answered is:

“Does the adoption of broad-based equity compensation in U.S listed companies lead to increased firm performances?”

The following are the specific questions which will be addressed in order to answer the general research question above:

- 1. Does the adoption of broad-based equity compensation lead to improved ROA of the adopting companies?*
- 2. Does the adoption of broad-based equity compensation lead to improved Tobin's Q of the adopting companies?*
- 3. Do other factors other than broad-based equity compensation also affect firm performances measured by ROA and Tobin's Q?*

1.3 Purpose of the study

The aim of this study is to undertake critical examination of the relationship that exists between equity-based compensation plans and firm performance of U.S listed companies. Earlier studies have shown that there is a direct relationship between equity-based compensation programmes and firm performances. However, there have been other studies which failed to support this evidence. This study will contribute towards this debate. It will also help investors to know how equity-based compensation schemes of companies listed on the U.S stock market affect the performances of companies in which they are investing, and to know whether their interests are aligned with that of managements and lower level employees of such companies. This will also be helpful in ensuring efficient contracting as a means of addressing the agency problem.

The research has the following specific objectives to achieve:

- To determine the impact of equity-based compensation plan on ROA.
- To determine the impact of equity-based compensation on Tobin's Q.
- To identify other equally important firm characteristics that affect firm performance in addition to broad-based equity compensation.

1.4 Research method

Research could be inductive or deductive, depending on the method of reasoning (Trochim,2006). Whereas deductive reasoning begins from a general perspective to specific, inductive reasoning begins from specific to general. Additionally, Creswell and Clark (2007, p.23) believe that while the deductive approach of reasoning begins from top to down, the inductive approach begins from down to top which is also called the bottom up approach. While deductive approach uses quantitative analysis, inductive approach uses qualitative analysis.

Muijs (2004) equally agrees that, any academic research can be categorized as either qualitative or quantitative. Aliaga and Gunderson (2002), (as cited in Muijs, 2004,p.1), define quantitative approach as the explanation of a phenomena which begins with data possessing numerical features and the analysis involves the use of mathematically oriented approach such as statistics.

Quantitative approach also uses testable hypothesis and statistical analysis to establish a link between what is already known and what can be learned anew. It also uses descriptive statistics for making inferences about the population of interest and also makes use of specific parameters in making those inferences from a sample of the population (Trochim,2006). It is not uncommon to find visual explanations of the collected data in the form of charts, tables, plots and graphs. Out of these, the quantitative approach will draw conclusions that are based on logical reasoning, empirical evidence and arguments from related literature (Trochim,2006; Saunders, Lewis and Thornhill,2009,p 414-478).

On the other hand, qualitative involves collecting data in the form of opinions and answers to questions from participants, grouping the data into themes and making an own enquiry which may include researcher's own subjective and bias judgment (Creswell,2013, p.22). Researcher participation in the data gathering is very common in qualitative research especially in the field of social sciences. It is based on these observations and data obtained and analysed that conclusions are drawn. That is why the qualitative approach is regarded as inductive reasoning from specific to general and the conclusions keep changing as more data is added (Cresswell,2013).

This thesis will be based on deductive reasoning and quantitative approach will be applied. It begins with reviewing appropriate literature and theories related to the subject, based on which the hypothesis will be developed. The next is to gather the relevant data, analyse it with the view to testing the hypothesis developed. The final step is to either accept or reject the hypothesis before drawing the conclusion.

1.5 Outline of the study

The whole research has been divided into seven main chapters, with each chapter serving as a sub-structure contributing towards attainment of the same aim of the research. The first chapter covers the introductory part that throws light on the background from which the research problem was coined, the rationale behind the use of equity-based compensation, the purpose of the current study, and the methodology to be adopted in conducting the study as well as the significance of this research.

The second chapter looks at the theoretical framework around which the whole research is built, and which also provided the basis for the formulation of the research question. In line with that, various theoretical issues related to equity compensation are addressed. It begins with the reasons for the adoption of equity-based compensation before a review of previous studies by various researchers and then the concept of agency theory as well as review of opposing views on why agency problem cannot be addressed by equity-based compensation. Aside from that, various theories surrounding broad-based equity compensation have also been expounded.

The third chapter addresses issues regarding institutional background to equity-based compensation and the nature and types of equity compensation are equally dealt with. Additionally, emergency of equity compensation in the U.S., meaning of equity-based compensation, types of equity compensation are also discussed.

How the hypotheses were developed and the various theoretical issues surrounding those hypotheses have been considered in the fourth chapter. From those theories, hypothetical propositions were made which would either be accepted or rejected based on the outcome of the empirical evidence. Chapter five explains methodological issues or the research design regarding how data for the study were obtained, and how the various regression models were developed using the variables affecting firm performances measured by ROA and Tobin's Q.

The descriptive statistics and the analysis have all been duly covered in the sixth chapter where analysis of the results is equally carried out. The very final chapter wherein the conclusions are drawn based on empirical findings while making comparisons with the findings of other studies and the researcher's own hypotheses and expectations or predictions are either confirmed or otherwise. It equally covers the summary of limitations of this study.

2 THEORETICAL PERSPECTIVE TO UNDERSTANDING CONSEQUENCIES OF EQUITY-BASED COMPENSATION

This chapter will focus on the key concepts and underlying theoretical framework for the thesis. Theories and concepts around which this thesis has been written will be explained, beginning with reasons for adoption of equity-based compensation before proceeding to prior studies detailing key findings made on the same topic before proceeding to agency theory which forms the key issue being addressed by equity-based compensation. This section will equally explain other theoretical issues surrounding broad-based equity compensation.

2.1 Reasons for adoption of equity-based compensation

According to Damodaran (2005), equity compensation has three forms. The first is regarded as the oldest one where it is awarded only to managers or executives. The second is that which is awarded or granted to employees and the third is an option given to other parties to the organisation as their compensation. When it comes to equity compensation granted to employees, it comes with a number of restrictions such as inability of the employee to claim or sell the equity until a certain time period has elapsed. The last is where employees are given option to purchase stocks of the company at a predetermined price at a certain point in time but also has restrictions attached.

Equity compensation could be targeted at one class of workers or on a broader scale. Sesil, Kroumova, Kruse and Blasi (2007) define equity-based compensation as broad-based when majority of the company's employees who work on full time basis are awarded such compensation schemes but not just the mere fact that they qualify. This may include both executives and non-executives of the company.

Damodaran (2005) outlines the following as the major reasons behind the adoption of equity-based compensation in the U.S as well as other countries:

First is for the alignment of shareholder-management interests. This is necessary due to agency theory which supposes that, managers as agents are less likely to act in the

best interest of shareholders because their interest and that of shareholders are diverged. For instance, managers may not be interested in borrowing and taking risks, and are not comfortable distributing cash to shareholders but will rather engage in acquisitions and building empires among others. On the other hand, shareholders will be interested in having the value of their investment increased, dividends paid, and their general interests served. Because these two parties have different interests, that is why the agency problem arises. And it is only when they all have the same interests that, the problem can be solved, hence the adoption of equity-based compensation.

Second is the issue of cash constraint. In the U.S, new technology firms in the 1990s resorted to equity-based compensation when they entered the stock market but had little cash to support their operations. In their bid to attract employees, they offered a lot of equity-based compensation programmes and the trend has continued since then.

Next is employee retention. Having attracted employees through equity compensation is not an end in itself. Because it is one thing attracting, and another thing retaining. And one of the strategies applied to achieve this is by means of equity compensation's requirement of vesting period. This is the time an employee is required to remain with the company in order to claim the equity compensation benefits. And whether the compensation is a restricted stock or stock option, employees are likely to stay with the company most especially when it forms greater part of their overall compensation.

The last reason is accounting and taxation purposes. Companies that use equity compensation have more benefits in terms of taxation than those that use cash-based compensation systems only. The value of the equity awarded is regarded as tax expense though no actual cash leaves the company and this helps the companies in paying less taxes. This was hugely boosted by a requirement in the Sarbanes-Oxley Act (2002) which required compulsory treatment of stock options in particular as expense (Jackson,2010). The accounting benefits derived by companies is regarded as one of the factors that accounted for the 2007-2008 meltdown. That is why managers of financial institutions were required to minimize their off-balance sheet

leverage as many were using stock options compensation schemes to engage in excessive off- balance sheet leverage. Because, this leverage increased their profits and share prices but exposed them to higher risks (Scott,2015, p.15). Because those accounting benefits were obtained by companies, when the mandatory treatment of options as expenses was removed from the Sarbanes-Oxley Act (2002), average CEO compensation in the U.S declined in the year 2003 (Jackson,2010).

Similar views have been shared by Hillegeist and Penalva (2003) who believe that equity-based compensation programmes are applied for the retention of employees, reduction of agency costs and incentivizing workers.

2.2 Previous studies on impact of equity-based compensation on firm performance

Several researchers have examined the impact of equity-based compensation on firm performances in different countries. Sesil,Kroumova,Kruse and Blasi (2007) investigated the 490 companies that adopted broad-based stock option compensations and how that affected the performances of such companies in comparison with companies of similar sizes which did not have equity compensation schemes as part of their remuneration programmes. Companies included in this study were from different industries such as communication, transportation, manufacturing, retail, finance, real estate and other services. Their result revealed that, companies with option programmes recorded increase in productivity and Tobin's Q whiles growth in sales and employment were also positive for adopting firms as compared to non-adopting firms. The level of compensation to workers was also higher for adopting companies as compared to non-adopting ones. It also came to light that, average productivity remained high to offset the dilution effect of such option programmes, thereby not affecting existing shareholder returns. Their findings also supported the view that, equity compensation is able to help retain employees in the company while giving returns to shareholders. However, one critical thing the study failed to establish is the fact that, it is unclear whether the dilution effect as described as remaining unaffected due to such option plans was greater than the gains made from increased firm performance due to the dilution. This is important because, from accounting point of view, Oyer and Schaefer (2005) did establish that, firms that

adopt stock option incur an average of 1.5 dollars in order to increase pre-tax net profit by 1 dollar. That notwithstanding, this study has shown that the agency problem is largely solved by the adoption of stock option programmes by companies.

Ittner, Lambert and Larker (2001) also investigated the economic determinants and performance consequences of equity grants to employees in “new economy” firms and were able to establish that, there is a positive relationship between equity grants and organisational and functional level performances. Again, factors that new economy firms consider before introduction of equity-based compensation schemes are different from what old economy firms consider. Firms included in this study were mainly from information and telecommunication technology spread across different sectors such as networking, semiconductor manufacturing, software services, computers and computer peripherals. This study was able to provide empirical evidence of the relationship between equity compensation and firm performance but equally could not answer the question of whether dilution effect of equity compensation is greater than the benefits of such compensation schemes. Besides, new economy firms are at the initial stage of choosing their optimum compensation plans (Demsetz & Lehn, 1985). As a result of that, their equity compensation plans are characterized by option overhang where a lot of options are not exercised, and this has the potential to negatively affect the market value of the firms. This claim is supported by Welles (1998) who indicated that, because such firms are relatively new to such compensation schemes, a lot of employees do not understand it properly. And a system that is not well understood by the beneficiaries can hardly be relied upon as yardstick for judging the performance of the firm. That notwithstanding, though the data characteristics slightly differs from other studies being reviewed, the objective remains the same. And this study further deepens understanding on the subject of equity-based compensation by shedding light on key issues that influence application of equity-based compensation in two different sets of groups, being new and old economy firms.

Some of the limitations of the above studies seem to have been covered in a study conducted by Sesil, Kroumova, Kruse and Blasi (2000) on the differences between the performances of companies that had adopted broad-based stock option compensation and companies that had no such compensation programmes. Industries

covered in this study were in the areas of manufacturing, services, communication, construction, mining, retail, wholesale, finance and real estate. The findings pointed to the fact that, for all the performance indicators measured by performance proxies including ROA and Tobin's Q, companies that employed broad-based stock options performed better than those that did not. They also recorded higher shareholder return and annual growth than non-adopting companies.

One finding that distinguishes this particular study from the previous studies is that, it was able to indicate that, the performance increase was able to offset the dilution effect of the introduction of broad-based option compensation programme. What it means is that, the performances recorded by the firms were able to compensate for the expenses incurred due to the introduction of such compensation system. This also shows that, much as stock option programmes affect firms' pre-tax profit as indicated by Oyer and Schaefer (2005), it is possible to have average profit or return that exceed the average cost of such a programme. Their result was also able to show that, employee retention was higher in companies that employed broad-based option compensation as compared to companies that did not. In the nutshell, they found that, the agency problem is dealt with through the adoption of such a compensation system.

It was also revealed that, companies that adopted such a plan did not record increases in fixed salaries paid to workers. Though recent study by Sesil, Kroumova, Kruse and Blasi (2007) indicated that compensation level for employees increased, this was said to have been accounted for by the equity-based component of their compensations and not cash-based payments. This supports the notion that, companies that sometimes have liquidity constraints adopt such compensation schemes. Several other researchers have also come to the same conclusion. For example, Rosenberg (2003) also found that companies adopt stock-based incentives for employees when the firms face leverage constraints and find it appropriate to compensate employees through stock options. This finding is also consistent with: Yermack, (1995a); Core & Guay, (2001); Ikäheimo, Kjellman, Holmberg, & Jussila, (2004).

All the above studies were based in the U.S., but it is equally important to compare results from other parts of the world. Hojen (2007) found no significant differences between performances of companies that had adopted equity-based compensation schemes and the performances of those that had not adopted equity-based compensation schemes in Denmark. The objective was to find out whether companies create value for shareholders by way of share price increases and increase in operational performances of the adopting companies. Industries that were included in the study were from energy, information and telecommunication, consumer discretionary, financial services, utilities, health care, consumer staples and manufacturing. The findings of this research also indicate the inconclusive evidence on the impacts of equity-based compensation on firm performance. However, just like any other research, it also shows little on how companies benefit in terms of taxation. Again, because it was also a broad-based application of equity compensation, it is difficult to ascertain the extent to which executives benefit compared to that of lower level employees. Apart from that, though equity compensation is assumed to result in attraction and retention of employees, nothing is known about this from the study. It was also found that, the agency problem does not seem to have been solved by adoption of equity-based compensation schemes in Denmark. In all, this study also provided another view of how companies perform when they adopt equity-based incentive programmes in comparison with those that do not adopt such programmes.

Mehran (1995) also conducted a study on the structure of executive compensation and how that affect performances of companies. Unlike the study of Ittner, Lambert and Larker (2001) which focused on information and telecommunication industry, this study was based on manufacturing industry. The findings indicated that, the more equity compensation awarded to executives, the higher the performances of those companies measured in terms of ROA and Tobin's Q. It also came to light that, companies that had more of their directors being outsiders employed more equity - based compensation schemes. Though this study was not broad-based application of equity compensation, the bottom line is that, it demonstrated that equity-based compensation influences firm performance just like previous studies have revealed. Frye (2004) also conducted a similar study by extending the result of Mehran (1995) which indicated that, indeed companies that employed equity-based compensation

recorded higher Tobin's Q for the period under study. One significant different Frye (2004) found was the fact that, the ROA had a negative relationship with the equity-based compensation system. The possible explanation for this difference is that, it is one thing being granted an equity-based compensation and another thing being exercised. And because ROA is an accounting ratio, it may take quite a longer period before being recognized due to realization and matching principles in accounting.

All the above studies helped in understanding the effect of equity-based compensation on firm performance. However, some only looked at such compensation programme applied on a narrower scale where the emphasis is on executives only. That is not to say that, equity-based compensation geared towards employees will necessarily result in improved firm performance because empirical evidence still remains inconclusive. For instance, in a study conducted to ascertain the impact of stock option plans and stock market reactions, Ikäheimo, Kjellman, Holmberg and Jussila (2004) found that, announcement of employee stock option plans targeted at top executives do not lead to significant stock returns and those targeted at employees rather result in negative stock market returns. Rather, the argument here is that, agency problem does not exist between management and shareholders only, but also between management and lower level employees as indicated by Gerhart, Minkoff and Olsen (1995). They demonstrated that it is not appropriate to consider agency theory from the viewpoint of managers and shareholders only. They explained that, there are different levels of contractual relationships. And when contractual relationships exist, agency theory cannot be ignored. While the executives have contractual relationship with shareholders, lower level employees also have contractual relationships with management, forming another agency relationship. One fact that stands out is that, both the executives and the lower level employees are working towards one common objective: which is to serve the interest of the main principals being the shareholders. Any compensation programme could have effect on firm performance. However, to be able to have a better assessment of such a compensation scheme on firm performance, it should be made available on a wider scale to include all whose inputs contribute towards the overall output of the company. And that is what this current study seeks to achieve. Though some of the studies mentioned above focused on broad-based application of equity compensation, the latest study is more than a decade ago, and this provides

additional motivation to investigate whether there has been a change since. It is equally worthy to mention that, the scope of this current study does not cover some of the limitations mentioned in the studies above, neither is it aimed at making inter firm comparisons as shown in most of the studies, but to make an intra firm performance comparison over a given period of time. Finally, this study will highlight other firm characteristics aside from equity compensation which equally affect performances of U.S listed companies.

2.3 Agency theory

In the first place, the issue of equity-based compensation is a subject of corporate governance. There are a number of theories of corporate governance such as agency theory, stewardship theory and resource dependency theory. For the purpose of this thesis, agency theory will be reviewed.

The need for having agents arose out of separation of ownership and control of firms (Jensen & Meckling, 1976). In this regard, suppliers of capital (shareholders) for the corporations are considered separate entities from those responsible for the day-to-day running of the companies (managers). The suppliers of capital are regarded as principals and those running the companies are the agents. The agents' responsibility is to perform certain tasks and to make decisions for and on behalf of the principals (Ross, 1973). Because the agents are rational, they could pursue their interests in ways that will not be in line with the interests of principals. It is out of this tendency that the agency theory was born.

Agency theory is simply defined as the relationship between one party (agent) and another (principal) where the latter delegates decision making authority to the former to perform certain services on behalf of the latter (Jensen & Meckling 1976). It is worthy to note that, engaging the services of agents is not a cost-free activity. Jensen and Meckling (1976) classify the cost of agency relationships as bonding costs, monitoring costs and residual losses. Bonding costs are instituted to restrict the agent from taking certain actions that will harm the interests of shareholders and where such decisions are taken, could result in financial compensation to the shareholder. Monitoring cost is in reference to costs that are paid by the principal to ensure that

the agent conducts himself within acceptable limit of behavior. Finally, residual losses arise when the first two agency costs fail to result in more benefits than their costs, in which case the costs exceed the benefits derived from their institution.

The agency theory is also viewed as a branch of the game theory which involves the study of contractual relationship between principal and the agent where the contract is designed in a way that is self-motivating for the agent to serve the interest of the principal (Scot, 2015,p.358). And this relationship often leads to moral hazard because while the principal will be looking for performance from the agent, the agent will also be looking for more reward. To deal with this challenge, Scot (2015) opines that two major contracts exist in handling the moral hazard issue. First is the employment contract between the firm and the manager while the second is the lending contract between the manager and the lenders to the firm. For the purpose of this study, emphasis is laid on the employment contract between shareholders as principals and the managers and employees as agents. One of the key elements of every employment contract is the compensation of the agent since that is what will motivate the agent to serve the interest of the principal well.

2.3.1 Reduction of agency problem via equity-based compensation

The agency theory generally implies that there is the existence of conflict which originates from agent's interests which are often not in line with that of the principal (Scot 2015:357). Because managers and employees in general are rational human beings, whether their compensation is tied to the performance of the companies or not, they may bias their decisions to serve their personal interests and this is what is called the opportunistic behavior (Scot 2015, p.326). As a result, there is the need for policies to control such tendencies. And this is done through efficient contracting and enhancing stewardship role. It is the stewardship that helps to protect debtholder and shareholders from opportunistic behaviours especially from workers in the organisation whether they hold managerial positions or not. Efficient contracting is very necessary because of information asymmetry. That is, workers especially managers within the organisation have certain information that outsider contract parties do not have. Because managers have their individual interests which may not be in line with that of shareholders, there is the need to enter into contract with them

in such a way as to align their interests with that of shareholders. By so doing, even if shareholders (principals) do not have access to all the information, by virtue of such contracts, their agents (managers) will still be compelled to work in the best interest of shareholders. Several research findings abound of possible opportunistic behaviours avoided by means of efficient contracting to solve the agency problem.

Dechow (1994) investigated whether managers as agents use accruals efficiently or opportunistically. She argued that, if accruals are found to be the result of opportunistic behaviours of managers, the market will reject accruals income in favour of cash flows. On the other hand, if accruals income is seen to be a reflection of efficient contracting, then accruals income will be more favourable and will have a direct relationship with share returns which is a proxy for shareholder value. Her findings revealed that net income had more association with share returns than cash flow which was evidence that there were not opportunistic behaviour on the part of management in using accruals opportunistically and thus there was efficient contracting.

Bharath, Sunder, and Sunder (2008) investigated the effect of accounting quality on interest rates charged in public and private lending markets. They argued that, firms with higher accruals means management have the higher tendency to engage in opportunistic behaviours. They found that firms that have lower interest rates are less likely to be engaged in opportunistic behaviours because they also have lower accruals. This is consistent with efficient contracting because the lending market will favour firms that have higher accounting quality by giving such firms loans with lower interest rates.

Mian and Smith (1990) also conducted a study on efficient contracting. They also used consolidation of parent and subsidiary companies as yardstick for their study. They argued that, the greater the level of interdependence between the parent and the subsidiary, the lesser the tendency to engage in opportunistic behaviours by management and the more efficient the contract will be. It means, the greater the level of interdependence, the greater the tendency to evaluate the performance of the group jointly and the more efficient such contract will be. Because, it is always better to evaluate the consolidated financial statement of the group than their separate

financial statements. As such, the greater the level of interdependence between parent and subsidiary, the higher the tendency to consolidate their financial statement and the lesser the possibility of opportunistic behavior.

These findings are indications that, the principal can be at the mercy of the agent if not for the existence of efficient contracting as a means to address the conflict of interest between shareholders and management. And this is the whole impulse of agency theory where there is the existence of conflict between the agent and the principal because their interests are at variance with each other.

Since these conflicts are as a result of perceived inadequate compensation, owners or shareholders have to incur incentive contract costs in order to solve this problem (Jensen & Meckling, 1976). The aforementioned research findings on efficient contracting assumed the existence of agency relationship between management and shareholders. However, incentive contract theory does not apply to management only, but to lower level employees as well. The essence of applying broad-based equity compensation calls for widening the net to cover lower level employees since the performance of companies are not influenced by management alone, but to a large extent by non-executive employees as well (Sesil, Kroumova, Kruse and Blasi, 2007).

Eisenhardt (1988) is of the view that, to be able to determine appropriate compensation programme which will be appropriate for any organisation, it has to be cited within the framework of agency theory. And in designing appropriate compensation programme for an organisation, there is the need to ensure it is enough to motivate workers and does not cost too much either, and this leads to efficient contracting. To ensure contract efficiency, there is the need to consider cost of moral hazard, monitoring cost, risk bearing attitude of agent, and pay-performance relationships (Eisenhardt, 1988).

As pointed out by Gerhart et al (1995) it will be inappropriate to view agency theory from the standpoint of managers and shareholders alone. This is because, the manager who is an agent has an employment contract with shareholders who serve as the principal. By the same token, managers could assume the role of principal in an

employment relationship with lower level employees. So in the long run, both the lower level employee and the managers are both serving the common interest of the ultimate principals who are the shareholders. It is based on this that Eisenhardt (1988) posits that, the best compensation programme that helps in dealing with the agency problem is not the compensation that just aligns the interests of managers with shareholders only. Rather, such as compensation schemes should also be extended to cover lower level employees because they even constitute the largest portion of the total workforce of every company. It is based on this that, equity incentives should not be targeted only at executives but should be broad-based to benefit all workers, whether executives or non-executives. This is based on the reasoning that, if only executives are entitled to such long-term compensation plans excluding lower level employees, executives may feel motivated enough, but lower level employees may not. And since they are at the operational level of the organization, their output is what will largely determine the performance of the executives' performance.

Again, because broad-based equity compensation scheme falls under group incentive scheme, it enhances team work and reduces suboptimality as far as performances are concerned. This results in improvement in team result due to the ease with which information is shared among management and lower level employees. According to Morishima (1988), when there is free sharing of information between management and lower level employees, it leads to improvement in productivity and the profit levels of companies due to reduction of information asymmetry. Additionally, Hochberg and Lindsey (2010) also assert that, workers are motivated to jointly work towards the maximisation of the common goal of the organisation and they are also involved in mutual monitoring to ensure that every beneficiary is working towards the common good.

Another reason why equity-based compensation helps resolve agency problem can be looked at from the efficiency wage theory. In this case, individuals are likely to stay with an organisation that provides compensation that goes beyond the market rate.

The above reasons for the adoption of equity-based compensation as antidote to the agency problem has been summed up Holmström and Milgrom (1991), who believe that equity-based compensation programmes are used to serve a dual purpose. The first is to serve as working tool to mitigate and share risks between the principal and the agent and also providing an incentive package to encourage productive behavior. It helps promote risk sharing responsibility between agent and principal because there is co-ownership of the business, and so the principal is not the only one who will suffer the consequences if the company is not ran efficiently. This is an indication that, once an agent is a part owner of the business, he is also acting as a principal at the same time. The second argument is that, the agent will be motivated enough to avoid negative or opportunistic behaviour at work. And when the agent is motivated enough to work, other things being equal, the firm performance will increase which becomes a win-win situation for both the agent and the principal.

From theoretical perspective, equity-based compensation seem to help deal with the agency problem. Based on the foregoing, it is apparent that equity-based compensation increases risk taking behaviour and provides enough motivation to encourage hard working attitude within the organisation since compensation is linked with the performance of the company.

2.3.2 Critiques of equity compensation as a solution to agency problem

Though theory and empirical evidence have indicated that, equity-based compensation helps in addressing the agency conflict, there are a number of criticisms which cannot be overlooked. It is for this reason that, Sesil et al (2005) pointed out that, it has to be cited within the right context before making any accurate judgment on whether it really helps deal with the agency conflict.

Much as the equity-based compensation is expected to motivate the agent to work towards attainment of long-term goals, Hall (2003) has indicated that, it has the tendency to encourage attainment of short-term results at the expense of long-term goals. This is consistent with Gerhart, Minkoff and Olsen (1995) who also share the same opinion that, in cases where the management intend to have a short-term stint with the company, their focus will be on achieving short term goals in order to earn

as much as they want and quit the job. And when short-term goals are pursued due to the introduction of equity-based compensation, it is regarded as value destroying behavior instead of a value creating one. An example of such value destroying behavior is when management tries to achieve short term results that will lead to increase in price of shares within the short term. The case of Enron can be cited as a reference. In order to maintain the value of the stock option of executives, earnings management practices were adopted (Dharan & Bufkins, 2008). Because of these practices, there were high investor expectations and these could not be met resulting in agency costs because the stock was overvalued. And this is what led to short-term measures by management to increase stock prices.

Apart from that, though it is expected that, equity-based compensation will promote risk taking among agents, not all equity compensation programmes will promote risk taking. An example is when a company grants stock options where the option can be in the money or out of money. An option is said to be “in the money” when it has an incentive effect (Ittner, Lambert & Larker, 2003). On the other hand, when it is out of money, it will serve as a disincentive and risk taking will be affected.

Coughlan and Schmidt (1985) argue that, there will always be information asymmetry and that, the principal will always have some cost to bear. The reason is that, there is internal information that the external shareholder does not have access to. And in designing the compensation, the management can withhold certain vital information from the compensation committee, especially when it bothers on performances to which the compensation is linked.

Finally, Kima and Ouimet (2014) and Sesil et al (2005) further indicate that, broad-based equity compensation could lead to free rider problem. Apart from the free rider problem, in a work environment where there is the application of fixed wage for employees in addition to equity-based compensation, if there are any gains from the equity-based compensation scheme, the employees will only regard the gain made as mere cushioning against rising cost of living and will not be motivating enough to improve firm performance.

2.4 Other theories of broad-based equity compensation

Broad-based compensation like any other concept has several other theories surrounding it. Though, agency problem happens to be the core issue this compensation is trying to address in this study, it is not out of place to delve into other equally important theories that are associated with this form of compensation.

2.4.1 Output-based incentive theory

This theory is based on the assumption that, when the efforts of employees can easily be checked, then the solution to agency problem lies in employing a fixed pay policy. However, in reality, due to complexities in the nature of most jobs, it is hard to have every aspect of employee's job well monitored and assessed in order to assign fixed compensations. According to Gerhart (2000), Milkovich and Newman (2002), these complexities are compounded by peculiar characteristics of firms in addition to the macro-economic environment in which those firms operate. It is as a result of the challenges in accurately assessing the jobs done by the employees that output-based incentive is considered to be the ideal compensation policy (Eisenhardt, 1988). And one of the such compensation policies is equity-based compensation programmes where the firm's overall output determines how much employees receive.

2.4.2 Collective effort and free rider theory

According to Weitzman (1995), when group-based compensation hinges on group performances, it is difficult to assess the performances of individuals. This creates room for individuals to play minimal or inactive roles in achieving the overall firm objectives. It is in view of this that, Kandel and Lazear (1992) have recommended the institution of measures that promote cooperation among employees in organisations where group-based compensation programmes are in place.

2.4.3 Psychological expectancy theory

According to Vroom (1995), group-based compensation system such as broad-based equity compensation will serve its meaningful purpose only when the employees to

whom it is targeted are able to have some level of control over the performance measures such as ROA and Tobin's Q to which their reward is attached. But in its very form, employees have little or no control over these performance indicators. This is quite counterproductive to the essence of group-based compensation where the aim is among other things, to influence group behaviour in the right direction to improve firm performance. And this is emphasized by Kandel and Lazear (1992) who indicated that, group behaviour is well emphasized under group-based compensation when the compensation beneficiaries can readily point to performance indicators to their peers and also exercise control over the indicator. But ROA and Tobin's Q are far beyond the reach of lower level employees who stand to benefit under broad-based options granted.

2.4.4 Accounting myopia

According to Hall and Murphy (2003), the cost of granting options is wrongly calculated and incorporated into the financial statement. Since organisations aim at offering compensation at a rather reduced cost to the rank and file, the miscalculated cost of broad-based compensation is not insulated from this theory. For instance, when organisations grant stock options to employees, the cost of such a transaction may be understated. This is largely because, the simple golden rule of accounting recognizes that, to every debit entry, there should be a corresponding credit entry. In this case, as other employees are offered opportunity to become part owners of the company, existing shareholders have their ownership dwindled by means of dilution effect. So not until this has been properly addressed in ascertaining the cost of stocks granted, the cost of such a compensation programme will always be understated.

2.4.5 Worker-management alliance

According to Kim and Ouimet (2014) Pagano and Volpin (2005), there are times in the life of organisation when takeover becomes obvious. To avoid such developments, management resort to 'bribing' or incentivizing employees in order to win their support in the event that a block-stakeholder moves for a takeover of the firm. And management can in place of increased wages and salaries grant equity-

based compensation to a large number of employees as a means of buying their loyalty which is a reason other than firm performance-driven objective.

3 INSTITUTIONAL BACKGROUND ON EQUITY-BASED COMPENSATION

This part will also provide detailed explanation on equity-based compensation system, the origin of this compensation in the U.S and current corporate governance practices surrounding it.

Khan (2011) defines corporate governance as the various methods, structures and systems that are put in place to manage and direct the affairs of companies towards attainment of organisational goals and minimising agency problems. At the core of corporate governance is the admittance of the fact that, there is the existence of relationships between different stakeholders who may be internal or external to the company. And this relationship exists primarily because ownership is separated from control, leading to agency relationship (Jensen & Meckling 1976). The essence of corporate governance is to ensure the minimisation of the agency problem. As such, companies that have strong corporate governance structures are likely to have weaker agency problems and companies with weak corporate governance systems have strong agency problems (Core, Holthausen & Larcker, 1999). Evidence of this assertion abound in recent history. Several corporate scandals which occurred in the late 1990s to the early 2000s heightened the interest of the general public in corporate governance issues which includes compensation schemes. Aligning the interest of agents with that of the principal is therefore paramount in contemporary corporate governance discourse. Jensen (1986) points out that, managers sometimes fail to pay dividends to shareholders even when excess cash becomes available. It is therefore not surprising that, the Sarbanes-Oxley Act of 2002 which came to effect following the corporate scandals which included the infamous Worldcom case strongly recommended the improvement of corporate governance practices (Scot 2015,p.9).

Unlike securities laws which are regulated at the federal level, corporate laws are usually administered by states in the U.S. The U.S Securities and Exchange Commission (SEC) is more concerned with the disclosures made by companies rather than the structure of those companies (Hollister, 2005). The United States is a market-oriented country and one of the characteristics of such countries is the

existence of strong shareholder protection because legislation is usually based on common law (Barth, Cram, & Nelson,2001). Shareholder value maximisation became a subject of great interest to managers in the 1990s due to numerous takeovers witnessed in the U.S. In their bid to keep their jobs and to avoid unwanted takeovers, executives of companies begun to align their interests with that of shareholders by adopting compensation schemes under the concept of shareholder value creation (Dobbin & Zorn,2005). This concept which became very popular within the corporate world in the U.S simply means that, the reason for the existence of a company is to promote the economic well-being of shareholders through the payment of dividends or by taking actions that will lead to an increase in share price (Jackson,2010).Due to this concept, shareholders are really influential in the U.S today and their influence permeates through the board structure of companies, executives and compensation of directors and strong emphasis on investor relations. In spite of strong protection by the law, shareholders as investors do not devote as much resources towards corporate governance practices as it should, especially with institutional investors. Institutional investors normally do not commit so much into formulating policies on corporate governance, nomination of their representatives to the corporate board of directors and shareholders proposals (Black, 1998; Choi & Fisch, 2008).According to Coffee (2003,p.9), there was a paradigm shift from complete cash-based compensation to equity-based compensation in the 1990s which shifted the focus of management towards the performances of the stocks of their companies. This phenomenon was also heightened by a roundtable discussion by executives of the largest companies in the U.S who came to the final conclusion that, the directors' main job is to ensure that the interest of all stakeholders have been taken into consideration or to promote the long-term interest of their shareholders (Jackson,2010). The concept of shareholder value maximisation has also influenced activism by trade unions and employees who also advocate for empowerment through pension programmes and long-term incentive plans such as equity-based compensation. This is what has generally shaped the corporate governance structure of the U.S till date. Based on the success of the U.S system, the Organisation for Economic Corporation and Development (OECD) in the year 1997 developed a world-wide system which was modelled after the U.S corporate governance practices (Jackson,2010).Contemporary U.S corporate governance is characterized by five

factors which are shareholder activism, market for corporate control, boards independence, executive remuneration and the role of gatekeepers (Jackson,2010).

3.1 Emergence of equity compensation in U.S.A

Equity compensation in general emerged and begun to gain popularity in the U.S in the 1980s (Mehdi & Imen, 2014). The U.S as an example of Anglo Saxon system is highly characterized by dispersed ownership of companies but used to have low institutional ownership of firms where one leader was charged with management and control of firms and such an individual was supervised by the financial market (Morland, 1995; Charreaux, 1997). This view had already been confirmed by Berly and Means (1932), that individuals possessed the highest percentage of ownership in corporations. This trend continued into the 1980s according to a study of corporate governance in the U.S conducted by Jackson (2010). Though dispersion of corporate ownership was in existence in the 1930s, it was established that between 1960s to the 1970s, managers wielded too much power coupled with weak ownership. It is this separation of ownership and control as early as the 1930s that led to the agency problems (Berle & Means, 1932). The agency problem was hugely contributed by nature of the board composition which gave shareholders minimal control and board decisions did not inure to the benefits of shareholders as it should have been. According to Mace (1971), boards were usually made up of insiders, both current and past executives, the CEO's friends mostly from "old boys' network". This board composition made it difficult for CEO decisions to be challenged by the board, thereby compounding the agency problem. The most affected by this challenge were shareholders because they had no control over selection of board members and the legal requirement at the time was cumbersome and expensive if they were to have proxy voting and having access for them to suggest their own candidates was not easy either (Gordon, 2007, p.1496-1497). Remuneration committees were equally not in existence at the time and so executives were paid fixed salaries and if they were to receive bonuses, those were tied to the company annual performance (Jackson, 2010). This means that, employees were also paid based on the same system. This equally implied that, for lower level employees to get promoted, they needed to remain loyal to their senior level managers and also had to show enough commitment (Kanter, 1978).

However, there was a turn of event during the 1980s due to foreign competition which was also characterized by high interest rates, stagnation of stock returns and company growth among others (Jackson, 2010). This engineered activism from different stakeholders where institutional investors became significant shareholders in companies. It was during those times that, shareholder value creation gained the attention of all stakeholders as a solution to the agency problem.

The increased popularity of equity-based compensation over the past thirty years in the U.S was also based on the same agency theory which suggested that, the best way to ensure that agents' interests were aligned with that of principals was to tie their compensation to the company performance. This call was further enhanced by a number of institutions such as United Shareholders Association, the Council of Institutional Investors and large state pension funds (Senbet, 2011). This led to the creation of the link between executive compensation and firm performance. A key issue here was the introduction of stock options and other forms of equity-based compensation systems (Jensen & Murphy, 2004). To the extent that, the increased competition and underperformance of U.S companies during those times led to widespread takeovers, the U.S congress placed a limit on the level of cash compensation to executives which was supplanted by increase in equity-based compensation (Coffee Jr., 2003). By the 1980s, the increasing trend of equity-based compensation had been widely accepted by managers in the U.S and the concept of shareholder value maximization had also become acceptable as a means of addressing the agency problem till date (Dobbin & Zorn, 2005). This has also been confirmed by Jackson (2010), who indicated that, equity-based compensation and stock options in particular became the most popular form of compensation as part of the restructuring and orientation towards alignment of principal and shareholder interests.

Several studies have confirmed the increased popularity of equity-based compensation due to the perceived benefits to organisations that offer such compensation programmes. In the U.S., this form of compensation increased more significantly during the 1990s (Ofek & Yermack, 2000). Morgenson (1998) indicated that in the year 1997, the 200 largest organisations in the U.S had set aside as much as 13% of their stocks for management alone, which represented an increase of more

than 7% over the previous eight years. This trend was also confirmed by a survey of 415 companies conducted by the U.S Federal Reserve which showed that, one third of the companies had actually applied broad-based equity compensation (Lebow, Sheiner, Slifman, & Starr-McCluer, 1999.p. 11). In addition, The Center for Effective Organisation of the University of Southern California came to the same conclusion that, there was an increasing trend of broad-based equity compensation when it surveyed 279 Fortune 1000 firms in the year 1993 and 212 Fortune 1000 firms in the year 1996. The percentage of companies offering broad-based equity compensation plans to more than 20% of their workers over the period went up from 30% to 51% (Lawler, Mohrman, & Ledford 1998.p. 34). The continuous increasing trend is an indication of the importance of this form of compensation in the U.S.

3.2 The nature and types of equity compensation plans in the U.S

The U.S Internal Revenue Service (IRS, 2015) defines equity-based compensation as any form of compensation that is paid to an employee, director or independent contractor of an organization where the monetary unit of the compensation is based on the value of the stock of the employer, whether the employer is a corporation or a partnership entity.

There are different types of equity-based compensation schemes available for all employees and management. They are employee stock options, employee stock purchase plans, restricted stock plans, employee stock ownership plans and different qualified retirement plans (Frye, 2004). These plans are put into two main categories. Frye (2004) groups them into nonretirement and retirement plans depending on the time during which the employee qualifies for such a plan. Apart from these types, there are other equity equivalent compensation schemes that are available in the U.S (IRS,2015; Dupee 1990). They are stock warrants, restricted stock units, phantom stock plans and stock appreciation rights.

3.2.1 Stock options

According to Wallin,Schalla and Apellman (2015), option gives the right to an individual (optionee) to buy a certain number of shares of company at a specified

price after the expiration of a particular time period known as the vesting period. Stock options derive its name from the fact that the optionee has the right to either purchase the stocks or to decline the purchase at the specified price. At the grant date, the price of the stock must be equivalent to the fair value of the stock, where fair value is the price at which the stock is traded on the stock market (Ittner et al.2001). There are three main stages that stock option goes through in its lifecycle. The first is the time when companies grant the options, which is called the grant date. The second phase is the option exercise where the optionee does the actual purchasing of the stock at the price. After this stage, the person becomes a stockholder. The final stage is the sale where the stockholder sells the stocks to another person.

Stock options usually vest over a period of time and in most cases the date of expiry is after ten years (Itner et al.2001; Schubert & Barenbaum,2008). Firms intentionally introduce vesting requirements as a means of encouraging employees to stay with the company (Damodaran, 2005). What distinguishes stock options granted to employees from those granted to executives is that, employees are under no obligation to submit anything to the U.S Securities and Exchange Commission (SEC) to report the option exercise details (Frye, 2004). In most cases, employee stock options are nonqualified plans. A nonqualified stock options simply means that, the employee who is entitled to the stock will be required to pay normal income tax on the difference between grant price and the market value of the stock (IRS, 2014). Also, employee stock options are not tradable which is an indication that, they are required to exercise the options before leaving the firm. And because the option portfolio could be built over time, the time period during which the employee remains with the firm leads to increased option incentives, making it difficult for other competing companies to hire such employees (Core, Guary & Larcker, 2003).

Stock option compensations are used as a means of tying the compensation of workers directly to the stock prices (Jenter & Frydman, 2010). In the U.S., stock options became the most popular form of executive compensation during the 1990s. This has been attributed partly to the favourable tax regime where stock options were taxed at the very lowest rate as far as capital gain taxes are concerned. This view has been supported by earlier studies into the surge in the adoption of option

compensation during that time (Murphy, 2002; Hall & Murphy, 2003). According to Jenter and Frydman (2010), stock option compensation constituted 20% of CEO compensation and increased to 49% in the year 2000. However, the trend changed after the stock market crash in 2001 where restricted stock options became more popular by the year 2006 (Jenter & Frydman, 2010). According to Jackson (2010), there was further decline in the use of stock option compensation particularly to CEOs after the 2007-2008 meltdown due to accounting treatment of option expenses which were removed from the Sarbanes-Oxley Act (2002).

3.2.2 Restricted stock

Restricted stocks are shares of companies that are granted to employees and one of the main characteristics is that, it cannot be sold by the employee over a given period of time (PWC, 2018). Ofek and Yermack (2000) have indicated that, the sale of such shares is barred for a minimum period of three to five years in the U.S. Employees acquire these shares after meeting certain restrictions which have been imposed by the employer. Wallin, Schalla and Spellman (2015) include some of such restrictions as those related to transfers and the right of the employer to buy back the shares after the contractual relationship ceases to exist. Usually, such stocks are bought back by the employer when necessary at the original price of the equity in some cases, the lower of the fair value and the original cost of the shares. This is normally for unvested shares. But in the case of vested shares, if the employee resigns, or the employer terminates the contractual relationship without cause, then the purchase price will be the fair value. On the other hand, if the contractual relationship is terminated by the employer for a cause, then the purchase price will be the lower of market price and the original cost (Wallin, Schalla & Spellman, 2015).

According to Schubert and Barenbaum (2008), this type of equity-based compensation system could be absolute or relative. Under the relative model, restricted stock is awarded to individuals within an organisation based on some performance measures (Schubert & Barenbaum, 2008). For instance, the measuring indicator could be firm performance measures such as the firm's return on equity which could also be based on comparative analysis of similar firms' performances.

Usually, firms award this to their employees after comparing their own performances with similar firms in the same industry.

When such an equity-based compensation system is targeted at executives of a company, there is always a baseline for awarding such stocks. Because it is based on comparative analysis of similar firms, if the management of the firm underperforms in comparison with competitors, executives will be awarded fewer number of shares. On the other hand, if they outperform competitors, they will be entitled to more shares. This is what is called *ex ante* award model (Schubert & Barenbaum, 2008). With the absolute model, restricted stocks are awarded without attachment to any specific performance. Rather, the board of directors decide other criteria for the award such as the position occupied by an executive. But this is not to say that, performance measurement is totally out of the criteria for the award (Schubert & Barenbaum, 2008).

3.2.3 Employee Stock Purchase Plan (ESPP)

The employee stock purchase plan allows employees to buy stocks of companies at a discount, usually 15% of the market value of the stock (Frye, 2004). The reason why the discount is a bit substantial is to make sure the employee will make some profit even if the share price does not increase or even when there is a slight decrease in the share price (Bryson & Freeman, 2014). This is more like a gift to employees to encourage them to increase productivity. However, they have a part to play in order to obtain this. Usually, the participating employees make financial contributions towards the plan through deductions from their salaries and must also hold the shares for a certain period of time. The employee pays part of the stock price while the employer pays the remaining amount (Bhagat, Brickley & Lease, 1984). The company then uses the built-up fund to buy the stocks for the employees on the purchase date. It is also worthy to note that, such arrangement does not yield tax benefits to the employee. Because, if the employer makes part payment for such stocks, the company will make deduction from the employee's salary while the employee includes it as a taxable income. Employee stock purchase plans can take the form of a qualified plan or a nonqualified. The qualified plans will normally require the consent of shareholders before it can be implemented and there is a cup

on the maximum price of discount that can be allowed. However, the nonqualified plan is not subjected to as many restrictions as the qualified plans.

3.3 Other equity-equivalent compensation schemes

As already mentioned, there are other forms of stock equivalent or equity equivalent compensation schemes available in the U.S such as phantom stock plans, stock appreciation rights, stock warrants and restricted stock units (IRS, 2015; Dupee,1990). These types of stock equivalents help the employees to also receive compensations or benefits which are parallel to those earned by shareholders (Dupee,1990).

3.3.1 Phantom stock plans

Under such an equity-based compensation system, the employee is given a certain number of units that can be obtained in the form of shares of the company (Deloitte,2018). In this case, the employees have the benefits of stock ownership, but they do not in actual sense own stocks of the company. That is why it is sometimes referred to as “shadow stock” or “synthetic equity”. As Miller (2012) puts it, its purpose is to create a sense of ownership in the mindset of the beneficiaries who have been helping grow the business. This again implies that, there is no dilution effect after granting of phantom stock to employees. This type of ownership does not give the holder any voting right like an ordinary shareholder. How much an employee receives on this unit is always determined by the value of the company’s equity on the stock market.

3.3.2 Stock Appreciation Rights (SAR)

This form of equity form of compensation is also not a direct equity but rather gives the holder some rights to receive payment from the company based on how much the current stock price has risen over and above the base value (Bierce,2017). The holder of this right is equivalent to an unsecured creditor. Because, if the company goes bankrupt, the company is under no legal obligation to pay for how much the holder is

entitled to. The payment for stock appreciation right can be made either in cash or stocks of the company.

3.3.3 Stock warrants

Warrants are rights given to individuals to buy stocks of companies usually at a certain date and at a price lower than the normal price at which stocks are sold (KPMG,2018). Miller (1970) also defines warrants as a certificate given to an individual by a company where the holder gives it back to the company at the end of a certain period of time in exchange for residual ownership of the company that issued it.

Warrants could also be given to already existing shareholders who would like to purchase more shares in the company. The company that issues the stock warrant is bound by the agreement to deliver to the holders of such agreements a certain number of shares at a particular time, and at a certain price under the conditions specified by the company (Berle,1927).

Miller (1970) mentions the following as the unique features of warrants:

1. The price at which it can be exercised does not change or can increase at pre-specified intervals
2. Provisions are set at different maturity dates
3. The holder can tender it in exchange for stocks of the company or cash equivalent
4. There are varying degrees of dilution protection

3.3.4 Restricted Stock Units (RSU)

This represents a promise that is made by a company to deliver a certain number of shares to its employees only after certain vesting conditions have been fulfilled (PWC,2018). Though restricted stock units in a sense represents an interest an employee has in a company, however, not until vesting conditions have been met, they remain intangible. For instance, an employee may be required to stay with the

company for a certain number of years before or after certain performance standards have been met. Usually, after vesting, fair market value is used in measuring how much they are worth.

4 HYPOTHESIS DEVELOPMENT

This chapter provides explanations on the theoretical basis for the development of the hypotheses that are being tested in this study. Also, some of the previous studies which were reviewed under chapter two are used to provide backing for the hypotheses developed.

From the above discussions, equity-based compensation is believed to help address the agency problem. And if agency problem is addressed, then other things being equal, adoption of equity-based compensation should have a significant positive relationship with a company's performance measured by Return on Assets (ROA). This has been supported by a number of previous studies (Sesil, Kroumova, Kruse and Blasi 2007; Sesil, Kroumova, Kruse and Blasi, 2000; Mehran 1995; Kuo, Li & Yu 2013). Again, the existence of efficient contracting will also support this hypothesis in the sense that, there will be little motivation for agents to engage in opportunistic behaviour and when this is avoided, firms' performances measured by accounting and market-based indicators will significantly improve. This assertion has equally been supported by previous studies (Dechow 1994; Bharath, Sunder, and Sunder 2008; Mian and Smith 1990). Finally, this will equally suggest that, the stakeholder theory proposed by Freeman (1984) would have been served. Based on this, the following hypothesis has been developed for testing:

Hypothesis 1: There is positive relationship between broad-based equity compensation and ROA of U.S listed firms.

Further, as Return on Assets (ROA) is an accounting performance measure, it is equally prudent to measure performance of firms by market-based measure to be able to fulfil the requirement of stakeholder theory explained in the literature review. Using Tobin's Q as a measuring indicator, a number of previous studies have proved that the adoption of equity-based compensation leads to increased productivity and by extension, Tobin's Q of those companies. The study of Sesil, Kroumova, Kruse and Blasi 2007; Sesil, Kroumova, Kruse and Blasi, (2000); both confirmed that adoption of broad-based equity compensation results in higher Tobin's Q. The same conclusion was made by Frye (2004) and Mehran 1995 of increase in firm

performance levels measured by Tobin's Q due to granting of equity-based compensation. As a result, the following hypothesis will be tested:

Hypothesis 2: There is positive relationship between broad-based equity compensation and Tobin's Q of U.S. listed firms.

5 RESEARCH DESIGN

This chapter deals with the procedure adopted in carrying out this research as a means of achieving the research objective. It begins with explanation of various proxies used as firm performance measures in addition to other firm characteristics affecting performance variables. Further, the population and sample, data collection in addition to the description of the method used for the data analysis are covered. It also addresses the basis for the regression models as well as explanation of the variables that are used in the analysis.

5.1 Proxies for firm performance and broad-based equity compensation

According to Neely, Gregory and Platts (1995), measuring the performance of an organisation means measuring the efficiency and effectiveness of actions taken within the firm. This means, a firm's performance is closely related to its effectiveness. Organisational effectiveness simply refers to the absence of internal factors drawing back organisational goals, absence of mistakes, working towards appropriate organisational activities, and ensuring judicious use of resources towards acquisition of other business assets to achieve organisational goals (Cameron, 1986). Organisational performance is regarded as a subset of organisational effectiveness and includes both operational and financial results. When it comes to financial performance, it is always used with reference to accounting numbers. According to Combs, Crook, and Shook (2005), 82% of financial performance refers to accounting measures and profitability happens to be the most commonly used measure. Worthy to mention is the fact that, performance can also be measured in terms of growth. Measuring firm performance either in terms of growth or financial indicators are all economic perspectives.

In measuring performance whether in terms of profitability or growth, it is equally important to note that, there could be other ways to measure this variable. This is where Freeman (1984) proposes the stakeholder theory of performance. This theory begins with identification of who the stakeholders are and what their expectations are in terms of performance measurement. The stakeholder view to firm performance goes beyond that of economic perspective to a social perspective. The economic

view always looks at value creation, but the social perspective looks at performance in terms of how well the interests of stakeholders are served which may not necessarily be a financial indicator. Freeman's perspective will better be understood when the concept of stakeholder is defined. According to Freeman (1984, p.46), stakeholder refers to "any group or individual who can affect or is affected by the achievement of the organisation's objectives". This includes individuals or entities within and outside the firm. Examples of stakeholders as cited by Donaldson and Preston (1995) are trade unions, communities, political groups and governmental agencies. Clarkson (1995) also mentions suppliers, shareholders, employees and customers as some other stakeholders. Because all these stakeholders have interests in firm performance, it is important to ensure that all their expectations are met. For instance, increased profitability, growth and market value are firm performance indicators which are of great importance to investors (Chakravarthy, 1986). Customers are interested in the firm's ability to deliver goods and services that are in accordance with their specifications in terms of prices, tastes, quantity and so forth (Fornell, Johnson, Anderson, Cha, & Bryant, 1996). In the case of governments and communities as stakeholders, they will also measure firm performance using criteria such as product quality, giving employment opportunities to the less privileged, embarking upon social amenities, ethical business practices and protecting the environment (Johnson & Greening, 1999; Waddock & Graves, 1997).

However, ensuring equal satisfaction of all the stakeholders will be a very daunting task to achieve. It is because of this dilemma that prioritisation of stakeholder demand becomes necessary in order to work towards attainment of the needed firm performance that will meet their expectations. In view of this, Mitchell, Agle and Wood (1997) believe there is the need to identify and prioritize according to the following criteria: the power the stakeholder wields over the firm, how legitimate are the claims of the stakeholder and how urgent are the demands of the stakeholder.

Performance can also be measured by different dimensions and there are different indicators of performance as presented in the table below:

Table 1. Dimensions and indicators of firm performance (Adapted from Santos & Brito (2012))

Dimensions	Selected Indicators
Profitability	Return on Assets, EBTIDA margin, Return on investment, Net income/Revenues, Return on equity, Economic value added
Market Value	Earnings per share, Stock price improvement, Dividend yield, Stock price volatility, Market value added (market value / equity), Tobin's q (market value / replacement value of assets)
Growth	Market-share growth, Asset growth, Net revenue growth, Net income growth, Number of employees growth
Employee Satisfaction	Turn-over, Investments in employees development and training, Wages and rewards policies, Career plans, Organizational climate, General employees' satisfaction
Customer Satisfaction	Mix of products and services, Number of complaints, Repurchase rate, New customer retention, General customers' satisfaction, Number of new products/services launched
Environmental Performance	Number of projects to improve / recover the environment, Level of pollutants emission, Use of recyclable materials, Recycling level and reuse of residuals, Number of environmental lawsuits
Social Performance	Employment of minorities, Number of social and cultural projects, Number of lawsuits filed by employees, customers and regulatory agencies

Based on stakeholder theory by Freeman (1984) and Mitchell, Agle and Wood (1997) stakeholder prioritization criteria, this thesis will focus on two of the dimensions by Santos and Brito (2012); which are profitability and market value. From these dimensions, the measuring indicators that will be used are Return on Assets (ROA) and Tobin's Q. The stakeholder theory was chosen because according to Adams and Neely (2003), the core of organisational success hinges on the firm's ability to meet the needs of stakeholders. And the three stakeholders who have the

most legitimate claims and are able to contribute the most to influence firm performance are investors, customers and employees (Kaplan & Norton, 1992).

5.1.1 Return on Assets (ROA)

The profitability dimension is usually measured by using net profit margin, Return on Assets and Return on Equity (Carey, 1974). The net income margin is simply the net income of the firm divided by net sales for the period. Return on Assets is defined as the total returns generated by a business to all of its stakeholders which include shareholders, governmental organisations, creditors and debenture holders (Pandey 2017). Return on Assets, just like any other financial ratio is calculated slightly differently by different organisations but the interpretations remain the same. For instance, according to Dehning and Stratopoulos (2002) Return on Assets is calculated by dividing net income by total assets whereas Return on Equity is the ratio of an entity's net income to the firm's common equity. Pandey (2017) calculates ROA as follows:

$$\frac{EBIT}{Average\ total\ assets} * 100 \quad (1)$$

Where EBIT=Earnings Before Interests and Taxes

There are a number of arguments in favour of the use of Return on Assets as firm performance measurement indicator. One of such arguments is from Schmidgall (2006), who believes ROA is able to indicate how much profit has really been generated from the total investment made. Also, Pandey (2017) indicated that, unlike ROE which accounts for returns to only equity shareholders, ROA takes into account, all other stakeholders in the organisation. This implies that, ROA is much broader in scope than ROE. It accounts for returns generated on assets from both long term and short sources. Further, by using ROA, a firm will be able to tell whether management is doing well in terms of amount of profit generated using the total assets at their disposal Schmidgall (2006). Another reason for using ROA is that, it can be divided into two parts under the DuPont composition. Historically, DuPont was the first organisation to use ROA in 1920 to determine the Return on

Assets used in farms (Pandey,2017). Several other studies have confirmed the viability of decomposing ROA. For instance, Dehning and Stratopoulos (2002), demonstrated that, the ROA can be decomposed into profitability and efficiency. By using ROA, it makes it possible to measure a firm's performance from the perspective of efficiency and profitability concurrently, thereby showing the firm's net profit margin and total assets turnover. The DuPont decomposition is as illustrated below by Dehning and Stratopoulos (2002) showing the relationship between Net Profit Margin (NPM), Total Assets Turnover (TAT) and the overall ROA:

$$\text{ROA} = \text{Net Income} / \text{Total assets} = (\text{Net Income} / \text{Sales}) \times (\text{Sales} / \text{Total Assets}) = \text{NPM} \times \text{TAT} \quad (2)$$

The Net Profit Margin (NPM) component measures the performance of the firm in terms of profitability while the Total Asset Turnover (TAT) indicates the level of efficiency with which assets of the company are being used. Because both components have effects of ROA, when net profit margin and total assets turnover increases, the ROA will increase. On the other hand, when both components decrease, ROA will also decrease. It must be noted that, when other variables remain unchanged, a change in sales alone will not result in any change in ROA. Rather, to be able to increase ROA, a firm must either increase the net income derived from a particular asset or be able to increase net income from the use of fewer assets. This study will rely on ROA due to its ability to measure both the level of efficiency and profitability of the firm.

Further, according to Hagel,Brown, Samoylova and Lui (2013) ROA provides explanation on how much profit is generated on every single amount of dollar invested by shareholders and therefore serves as a measure of income that the shareholder's funds have generated. Another argument in favour of ROA is that, unlike ROE which creates wealth only for equity shareholders, the former creates wealth for all the stakeholders in a company (Pandey,2017) which is consistent with the stakeholder theory of Freeman (1984).

Also, the major weakness of ROE as accounting measure is the fact that, it does not recognize leverage which makes it incomplete in assessing the overall performance of the firm because firms are financed with both debt and equity. On the other hand, ROA provides a more balanced measure of accounting performance because it is able to account for the risk that arises from leverage which ROE fails to. There is a direct relationship between leverage and assets (Hagel, Brown, Samoylova & Lui, 2013). Therefore, when leverage increases, asset value also increases. If assets are put to good use, ROA increases and if assets are not put to productive use, ROA decreases. These provide the basis for the preference of ROA over ROE as accounting performance measure.

Finally, a number of previous studies have used ROA as firm performance indicator. First of all, Sesil, Kroumova, Kruse and Blasi (2000) compared the performance of companies that award broad-based stock options to their employees as compared to companies that do not offer broad-based stock options to their employees. Frye (2004) also used ROA as proxy for firm long-term performance in a study on equity-based compensation for employees and how that affect firm performances. This study will adopt the formula used by Dehning and Stratopoulos (2002) where ROA is calculated as net income divided by total assets.

5.1.2 Tobin's Q

Tobin's Q was named after James Tobin though historical records indicate that, the theoretical framework for this macroeconomic variable was jointly developed by James Tobin and William C Brainard all of Yale University (Bartlett & Partnoy, 2018). The original theoretical framework developed in 1968 which underpinned the Tobin's Q was that, "the market valuation of equities, relative to the replacement cost of the physical assets they represent, is the major determinant of investment." (Bartlett & Partnoy, 2018). For that matter, there is the high possibility of investing in an entity's assets when capital has higher value in the market than it actually costs to produce in the same market. On the other hand, the possibility of investing in an entity's assets is low when the value of capital is lower than how much it costs to replace.

Since its inception many years ago, scholars in the areas of finance and law have used this as proxy to measure firm performance in numerous studies. Over three hundred law review articles in corporate and security laws have used Tobin's Q as proxy for firm performance and has also featured in hundreds of peer review in both finance and economic journals (Bartlett & Partnoy, 2018). Though it was originally intended to be used as model for determining investment behavior, it has become an acceptable indicator for measuring firm performance. For instance, in manufacturing industries, a number of reasons have been assigned for its usage. According to Chung and Pruitt (1994), manufacturing industries have widely adopted the Tobin's Q for a number of reasons such as:

- (a) analysis of cross-sectional differences when making both investment and diversification decisions
- (b) the effect of equity ownership by managers in organisations and how it affects performances of those firms
- (c) the relationship between managerial performance and tender offer gains, investment opportunities and tender offer responses
- (d) when making financing, dividend, as well as when making policies regarding compensation schemes

Tobin's Q is used to indicate whether a firm has been undervalued, overvalued or fairly valued. To be able to determine the extent of valuation, it depends on the relationship between a firm's market value and its intrinsic value. Where the market value simply refers to how much the assets of a company are worth whereas the intrinsic value refers to the perceived value of the firm. The Tobin's Q is usually measured on a scale of 0 to 1. The ratio between 0 to 1 means the firm is undervalued. What it simply means is that, it costs more to replace the assets of the company than the cost of its stock. On the other hand, the firm is said to be overvalued when the Tobin's Q is higher than 1. This also means that, the firm's assets is worth more than it costs to replace the assets of the firm. In simple terms, the theory of the Tobin's is that, if Q is greater than one (1), then it means additional investment in the firm is worth it. Because, the cost of investment will be less than the profit generated by those investments. If it is less than 1, it will be better to sell

the assets of the company. The ideal state where the firm is at equilibrium is when Tobin's Q is equal to 1.

As a result, the Tobin's Q just like accounting ratios, has been calculated differently by different authors but the results and interpretations remain the same. Here are a few mathematical expressions of this performance measuring indicator. Ali, Mahmud and Lima (2016) define it as a comparison of the market value of the firm and its replacement value and is given as:

$$\frac{\text{Equity market value} + \text{Liabilities book value}}{\text{Equity book value} + \text{Liabilities book value}} \quad (3)$$

Source: Ali, Mahmud and Lima (2016)

Wolfe, Carlos and Sauaia (2005) define Tobin's Q as the ratio of a firm's market value and its replacement cost. In simple terms, it means dividing the firm's market value by the total replacement cost of its assets.

$$\frac{(MSV + MVD)}{RVA} \quad (4)$$

Where:

MSV = market value of company's outstanding stock

MVD = market value of all of a firm's debts

RVA = replacement cost of the firm's production capacity

Source: Wolfe, Carlos and Sauaia (2005)

The Tobin's Q has been used in different sectors as well to measure the value of firms. For instance, in a study conducted by Ali, Mahmud and Lima (2016), it was used as performance indicator to measure the market value of banks in Bangladesh.

Similarly, Kiel and Nicholson (2003) used Tobin's Q as a non-accounting performance measure when assessing the impact of board composition on firm performance.

Tobin's Q is used in tandem with ROA because it is often affected by external factors which are beyond the control of executives of the companies. The reason is that, the external business environment is beyond the control of the executives of companies. As a result, firm performances as indicated by market remains very reliable because those measures are devoid of manipulations through practices such as earnings management. Further, Fisher and McGowan (1983) have argued that accounting rate of performance measure provides inadequate measure of firm performance as compared to market-based measures. Finally, accounting performance measures are used together with market-based measures because while accounting-based performance measures are historically oriented, financial market-based performance indicator (Tobin's Q) is both current and future performance indicator.

The use of Return On Assets (ROA) and Tobin's Q in this study as proxies for accounting and market-based performance measures is consistent with Hillegeist and Penalva (2003), Mehran (1995), Core et al (1990), Wright and Matolcsy (2011), Elayan, Lau and Meyer (2003), Højen (2007), and Sesil, Kroumova, Kruse and Blasi (2000).

5.1.3 Change in fair value of stock options granted

Having looked at these firm performance indicators and how they will be calculated, how the proxy for equity-based compensation will be determined is equally worth considering. This study will use change in fair value of stock options granted as proxy for broad-based equity compensation and will follow the approach of Ofek and Yermack (2000) in calculating the change in options granted with a slight modification. Stock options will be determined by calculating the change in fair value of the options granted scaled by total assets as follows:

$$\Delta OPTFVGR = \frac{\frac{OPTFVGR_1 - OPTFVGR_0}{OPTFVGR_0}}{Total\ assets_1} \quad (5)$$

Where: $\Delta OPTFVGR$ is the change in fair value of stock options granted, $OPTFVGR_1$ is the fair value of the options granted for the current year and $OPTFVGR_0$ is the fair value of the options granted for the previous year. $Total\ assets_1$ represents total assets for the current year.

5.2 Other firm characteristics affecting ROA and Tobin's Q

Having looked at various dimensions and indicators of firm performances, it is equally imperative to consider what other factors really drive market-based and financial performances of companies aside from equity-based compensation. Hillegeist and Penalva (2003) have indicated that, there are other firm characteristics that equally affect firm performances. In a study conducted by Demirhan and Anwar (2014), it was found that the leverage and liquidity affect financial performances of companies in Turkey. Similarly, Deitiana and Habibuw (2015) were able to confirm that, leverage and liquidity are able to influence performances of companies. A firm's leverage refers to the extent to which companies borrow in order to enhance their profitability. Because, firms need to maintain manageable level of debt financing of their activities in order to remain profitable (Modigliani & Miller, 1963). Leverage can affect the performance of companies positively or negatively. According to Jensen (1986), when a company has high level of leverage, it limits the ability of management to use free cash flows to engage in value destruction activities. Similarly, when firms have high leverage ratios, it affects their ability to raise more debt financing to carry out value creating activities and has been used as control variable in previous studies (Jensen 1986; Myers, 1977; Agrawal, & Knoeber, 1996). This has also been confirmed by a number of studies that as leverage increases, profitability falls and this leads to negative effect on return on assets (Deloof 2003; Kebewar 2013; Enqvist, Graham, & Nikkinen, 2014). The leverage of the firm which is given by Basu, Hwang, Mitsudome and Weintrop (2007) and Matolcsy, Shan, Seethamraju (2012) as:

$$\frac{Total\ debts}{Total\ assets} \quad (6)$$

A firm's liquidity is equally important in measuring its ability to pay for its short-term debts when they fall due (Keown et al. 2011) as inability to do so is an indication of insolvency (Black 2009, p.183). Liquidity has the tendency to affect the operational performances of companies and their very survival, growth and risk level especially during bad economic conditions (Jose, Lancaster, & Stevens, 1996). This equally implies that, there is a relationship between liquidity and the financial health of organisations. Fang, Noe and Tice (2009) have also held that, liquidity promotes good investment decisions as that helps in minimizing opportunistic behaviour by management. If liquidity helps minimize opportunistic behavior, then it is anticipated that, this will affect firm performance since it also indicates efficient contracting. Liquidity is given by Keown, Martin and Petty (2011, pp. 90-91) as :

$$\frac{\text{Current assets}}{\text{Current liabilities}} \quad (7)$$

According to Hillegeist and Penalva (2003), there are some vector characteristics of firms that affect firm value measured by Tobin's Q including size of the firm and growth opportunities. Similarly, Shin and Stulz (2000) found that growth opportunities affect firm performance because, the more options a firm has to grow, the more sales is made and that affects the firm's total earnings and market value. Positive relationship between growth opportunities and firm profitability has also been confirmed by Shin and Soenen (1998) and García-Teruel and Martínez-Solano (2007). Growth opportunities will be determined according to the firm's sales growth which is consistent with Diaz and Hindro (2017) and is given as:

$$SG = \frac{Sales_1 - Sales_0}{Sales_0} \quad (8)$$

Where $Sales_1$ = Current year sales values and $Sales_0$ represents lagged year sales values.

SG=Sales growth

Chaudhuri, Khumbakar and Sundaram (2016) have indicated that, firm size affects the performances of companies which is determined by the total assets of the firm

(Kuo, Li & Yu, 2013). Koch and McGrath (1996) have also indicated that, large firms have the ability to widen their scope of operation, thereby increasing the firm performances. It is therefore expected that, the size of the firm has a positive impact on the performance of organizations.

Age of the firm has also been found to have effect on performances of companies in several studies. Sorensen & Stuart (2000) found that organisations become more inflexible over time when they become very old due to existence of organisational inertia and affects their performances negatively. On the contrary, Liargovas and Skandalis (2008) assert that, because old firms have been in existence for long, they have learned enough from the environment and have become more experienced and know how to deal with challenges that confront them than new firms. As a result, old age leads to improved performance of organisations. Additionally, Loderer, Neusser, and Waelchli, (2009) found that as firms increase in age, their performances decline in terms of Return on Assets and Tobin's Q and that firms rather do better when they are young. This study will apply age of the firm as defined by Shin and Stulz (2000), as the number of years during which the firm has had its data in the CRSP database:

$$\text{CRSP, log (Firm Age)} \quad (9)$$

The last factor to consider in this study is a firm's ROA. Because this is an accounting- based variable, it can also affect the market-based performance measure of firms. This has been confirmed by Alghifari, Triharjono and Juhaeni (2013) indicated that, while other factors account for 85.4% variations in a firm's Tobin's Q, the remaining 14.6% is accounted for by the firms' ROA. This indicates a significant effect of ROA on the firm's market-based performance. Variables that are expressed in natural logarithms are in line with previous studies (Duffhues & Kabir, 2008; Brick, Palmon, & Wald, 2006). From the foregoing, the following five predictions are made based on other firm characteristics:

Prediction 1. Leverage has negative relationship with ROA

Prediction 2. Liquidity has positive relationship with ROA

Prediction 3. Growth opportunities has positive relationship with ROA and Tobin's Q

Prediction 4. Age of the firm has positive relationship with ROA and Tobin's Q

Prediction 5. Firm size has positive relationship with ROA and Tobin's Q

5.3 Data

Saunders, Lewis and Thornhill (2009, p.212) define population as the total number of cases out of which a sample is drawn whereas sample is regarded as the number of cases chosen out of the population from which data will be gathered and generalization will be made to represent the views of the population. The target population for this study comprises of companies listed in the U.S. stock market. Companies used for the study are from different industries such as energy, retail, information and communication technology, hotel, healthcare, transport, aerospace, utilities, manufacturing, and automobile, banking, insurance and so forth.

Secondary sources of data will be relied upon to carry out the analysis. Data used for this study are related to publicly traded companies in the U.S and are obtained directly from Center for Research and in Security Prices (CRSP) and Compustat database from 2011 to 2015. Data on stock options are obtained from the database as proxy for all equity-based compensations. The original dataset comprised of a total of 36,844 observations. Data related to firms that had missing values were deleted. Missing values were in respect of those from companies that had end of fiscal year stock prices but missing values in the financial statements. After trimming the data, it came down to a total of 2064 firm observations. Variables obtained from these companies were in respect of net income, total assets, total liabilities, current liabilities, current assets, total debts, age of the firm, stock prices, shares outstanding, sales, number of stock options granted, and total shareholder equity. While total assets and net income served as the inputs for the Return of Assets (ROA) computations, total liabilities, stock prices, shares outstanding and total shareholder equity served as inputs for the Tobin's Q computations.

This study uses the date on which the equity compensation was granted. The grant date of the equity-based compensation is used instead of the exercise date due to a number of reasons:

First, this is consistent with the study of Frye (2004) in a study on the equity-based compensation for employees. Again, Ikäheimo et al (2004) have indicated that, announcement of equity-based grant to workers is received by the shareholders in particular that agency problem is being addressed. As a result, it is an indication that, employees and management are being motivated to take decisions in the best interest of shareholders. In line with the same argument, Yermack (1997b) indicated that, management in particular grant stock options in anticipation of good company performance. By so doing, they grant the options at a time when the stock price is usually low in order to set the set strike price at a favourable level where they will maximize the gains in future. Related to that is the argument by Carlin and Ford (2005), that, equity-based compensations are often granted at a time that preceeds disclosure of bad news in a bid to decrease the strike price and at a time when stock prices are particularly low. So the timing of equity-grant is as important as the motives behind granting such compensation system.

Finally, Larcker (1983) has also indicated that, first time announcement of adoption of equity compensation results in positive stock market reaction. Since the market perceive such compensation announcement as good news, other things being equal, it should lead to improvement in firm performance measured in terms of Tobin's Q.

5.4 Regression model for Return on Assets (ROA)

To be able to know the effect of equity-based compensation on firm performance, the hypothesis developed in chapter four (4) together with the predictions of chapter five (5) will be tested using simple linear regression. Equations 9 and 10 are used to test the relationship between stock options and firm performances measured by Return on Assets (ROA) and Tobin's Q where each of the two proxies of firm performance are dependent variables.

To be able to answer hypotheses one (1) and two (2), the two regression models used are based on the modified version of Duffhues and Kabir (2008) in studying the relationship between compensation and firm performance and will be extended to cover variables employed by Diaz and Hindro (2017) in measuring ROA. Therefore, to be able to test hypothesis one (1), ROA is regressed on option compensation and other variables as follows:

$$ROA_{it} = \beta_1 \Delta OPTFVGR_{it} + \beta_2 LIQ_{it} + \beta_3 SIZE_{it} + \beta_4 LEV_{it} + \beta_5 GROWTH_{it} + \beta_6 AGE_{it} + \epsilon_{it} \quad (10)$$

Where ROA_{it} is the return on assets on firm i at time t , $\beta_1 \Delta OPTFVGR_{it}$ is the change in fair value of options granted by firm i at time t , $\beta_2 LIQ_{it}$ is the liquidity of firm i at time t , $\beta_3 SIZE_{it}$ is the size of firm i at time t , $\beta_4 LEV_{it}$ is the leverage of firm i at time t , $\beta_5 GROWTH_{it}$ is the growth opportunities of firm i at time t , $\beta_6 AGE_{it}$ is the age of firm i at time t , and ϵ_{it} is the error term.

5.5 Regression model for Tobin's Q

In order to measure the performances of companies on the basis of market value and their book value, the following regression model has been developed in order to test the hypothesis 2:

$$TBQ_{it} = \beta_1 \Delta OPTFVGR_{it} + \beta_2 GROWTH_{it} + \beta_3 SIZE_{it} + \beta_4 ROA_{it} + \beta_5 AGE_{it} + \epsilon_{it} \quad (11)$$

Where TBQ_{it} is the Tobin's Q of firm i at time t , $\beta_1 \Delta OPTFVGR_{it}$ is the change in fair value of options granted by firm i at time t , $\beta_2 GROWTH_{it}$ is the growth opportunities of firm i at time t , $\beta_3 SIZE_{it}$ is the size of firm i at time t , $\beta_4 ROA_{it}$ is the return on assets of firm i at time t , $\beta_5 AGE_{it}$ is the age of firm i at time t , and ϵ_{it} is the error term.

5.6 Dependent variables

In the case of firm performance, there are several other indicators of firm performances as shown from the literature review section (Table 1), but this study will use ROA and Tobin's Q and these two will serve as dependent variables.

5.7 Independent variables

Because this study is based on the how equity-based compensation affects firm performance, equity-based compensation serves as the independent variable and equity-based compensation is proxied by stock options.

Apart from that, there are several factors that affect the performances of companies as explained under 5.2. In view of this, it is necessary to include these as independent variables which are capable of affecting the dependent variables, being the firm performance. These other variables in this study are liquidity, firm size, leverage, growth opportunities, and age of the firm. The table below summarizes the various variables used in this study.

Table 2. Summary of variables description (Adapted from Diaz and Hindro (2017))

Variable	Abbreviation	Description	Formula
Return on assets	ROA	Proxy for profitability	Net income/Total assets
Tobin's Q	TBQ	Proxy for market based performance	$\frac{\text{Equity market value} + \text{Liabilities book value}}{\text{Equity book value} + \text{Liabilities book value}}$
Change in fair value of options granted	$\Delta OPTFVGR$	Proxy for equity-based compensation	$\frac{OPTFVGR_1 - OPTFVGR_0}{Total\ assets_1}$
Size	LOG_TA	Natural logarithm of total assets	Log (Total assets)
Liquidity	LIQ	Measure of firm ability to pay short term debts	Current assets / Current liabilities
Leverage	LEV	Percentage of assets financed from debts	Total debts / Total Assets
Growth	SG	Growth opportunities	$SG = \frac{Sales_1 - Sales_0}{Sales_0}$
AGE	LOG_AGE	Number of years a firm has had its data in CRSP	CRSP, log (Firm Age)

Based on the above explanations, the following model has been developed indicating the direction and the impact of the independent variables on the dependent variables:

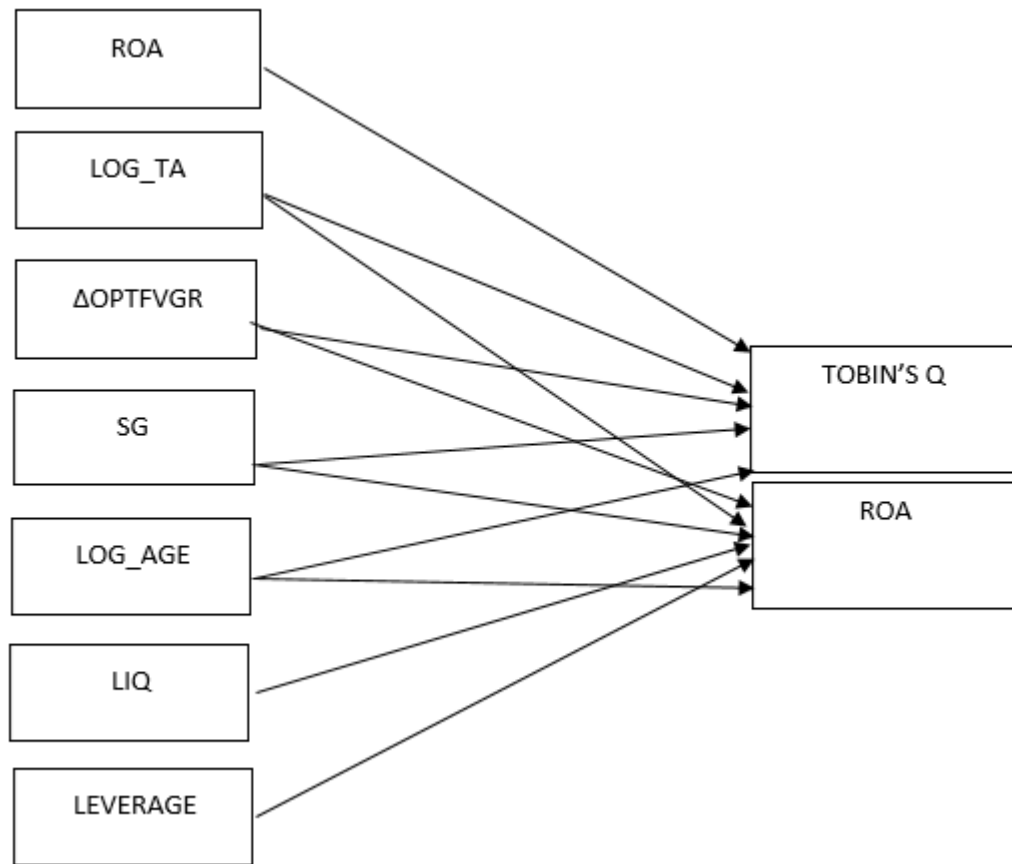


Figure 1. Model of the hypothesized relationships

The figure above shows that, apart from firm size, change in fair value of stock options granted, growth opportunities and age of the firm which affect both ROA and Tobin's Q, liquidity and leverage are other independent variables that affect only ROA while ROA also serves as the other variable affecting only Tobin's Q.

6 EMPIRICAL AND DATA ANALYSIS

Table 3.Descriptive statistics of variables

Variable	N	Minimum	Maximum	Mean	Std. Deviation
LEVERAGE	2064	0.017	17.266	0.568	0.722
LIQ	2064	0.012	31.915	2.821	2.638
Log_Age	2064	1.609	4.174	2.860	0.678
LOG_TA	2064	1.867	14.105	7.663	2.245
ROA	2064	-10.142	0.734	-0.108	0.493
SG	2064	-0.971	26.592	1.062	3.694
TOBIN_Q	2064	0.427	3190.242	13.631	80.371
ΔOPTFVGR	2064	-4.087	3.968	0.001	0.208

The table 3 above shows the multivariate statistics of the variables. In order to reduce the impact of outliers on regression coefficients, all the variables are winsorized by setting the values in the top one percentile to the highest values of the 5th and 95th percentiles. As can be seen from the data, the maximum value for ROA was 0.734 while the minimum was -10.142. The possible explanation for the negative figure is that, not all included firms made profits over the five-year period covered by the study. In the case of Tobin's Q, while the minimum was 0.427, the maximum was 3,190.242 This means while some of the companies are undervalued, others are highly overvalued and can be confirmed from the level of standard deviation of 80.371. In terms of the firm size measured by log(total assets),the minimum was 1.867 while the maximum value was 14.102. Looking at the standard deviation of 2.245, it could be seen that the companies are not significantly dispersed from the mean in terms of size, and this is also confirmed by the value of the mean size of 7.663. In terms of leverage, while some of the companies had very low level of debt financing represented by a minimum of 0.017, the maximum stood at 17.266 which is also due to the fact that, the sample companies come from different industries. Because some industries require higher level of gearing ratio than others. The extent of liquidity among the sample companies was equally highly dispersed from the mean value as the standard deviation stood at 2.638 while the minimum and maximum were 0.012 and 31.915 respectively. This is also due to the fact that, some industries require more current assets than others, particularly those in the

merchandise industry as compared to those operating in service industries. Finally, some of the firms increased the number of stock options granted over the period while others decreased the number of stock options granted, with the minimum number being -4.087 while the maximum number stood at 3.968.

6.1 ROA and Tobin's Q Evidence

Table 4. Pearson correlation results of variables

	LEVERAGE	LIQ	Log_Age	LOG_TA	ROA	TOBIN_Q	ΔOPTFVGR	SG
LEVERAGE	1							
LIQ	-0.260** (0.000)	1						
Log_Age	0.003 (0.894)	-0.061** (0.006)	1					
LOG_TA	-0.133** (0.000)	-0.176** (0.000)	0.256** (0.000)	1				
ROA	-0.687** (0.000)	0.042 (0.054)	0.143** (0.000)	0.473** (0.000)	1			
TOBIN_Q	0.567** (0.000)	-0.026 (0.237)	-0.020 (0.361)	-0.158** (0.000)	-0.626** (0.000)	1		
ΔOPTFVGR	-0.130** (0.000)	0.011 (0.628)	-0.010 (0.659)	0.023 (0.288)	0.210** (0.000)	-0.301** (0.000)	1	
SG	0.010 (0.639)	0.111** (0.000)	-0.212** (0.000)	-0.149** (0.000)	-0.165** (0.000)	0.087** (0.000)	0.133** (0.000)	1
N	2064	2064	2064	2064	2064	2064	2064	2064

N=number of observations, t-values in parentheses, **= 0.01 significance level (2-tailed).

The correlation analysis in the table (4) above precedes the regression analysis to be able to show the relationships between the two dependent variables (ROA and Tobin's Q) and the independent variables. For the purpose of this study, the pivotal issue for discussion will be how ROA and Tobin's Q are correlated with other independent variables. The first dependent variable to be addressed is ROA which will be followed by Tobin's Q.

From the table above, change in fair value of options granted ($\Delta\text{OPTFVGR}$) has a statistically significant linear relationship with Return on Assets (ROA) with a coefficient (r) of 0.210 with ($p < 0.01$). The direction of the relationship is positive, indicating that change in fair value of options granted ($\Delta\text{OPTFVGR}$) and Return on Assets (ROA) are positively correlated. This indicates that, when a firm grants more options, its performance in terms of ROA increases. The magnitude, or strength, of the association however is weak or small ($0.1 < |r| < 0.3$).

There is a negative correlation between sales growth and firms' Return on Assets (ROA) with coefficient of -0.165 and p-value less than 0.01 while a positive correlation was recorded between size of firms and their performances with coefficient of 0.473 and this relationship is statistically significant with $p < 0.01$. Unlike the change in fair value of options granted and growth opportunities which have weak correlations with ROA, large firm size is moderately associated with ROA ($0.3 < |r| < 0.5$). This suggests that, as firms grow in terms of assets, they tend to perform better than younger firms with little amount of assets at their disposal.

Just like size, age of firms is also positively correlated with ROA with coefficient of 0.143 and is statistically significant ($p < 0.01$). The strength of this relationship is equally weak ($0.01 < |r| < 0.3$). This is an indication that, old age of firms leads to improved performance in terms of ROA.

Leverage has a negative correlation as expected because as firm's leverage decreases, it increases management's ability to borrow to embark on value creating activities leading to an increase in firm performance by way of ROA. Leverage's coefficient of -0.687 is equally statistically significant with $p < 0.01$.

Firms' level of liquidity is equally associated with high performance in terms of ROA because there is a positive but weak correlation between the two with coefficient of 0.042 at $p < 0.01$. Regardless of the weak correlation, this is statistically significant. This indicates that, as firms' liquidity improves, they are able to increase returns on total assets (ROA) and hence performances of the companies are enhanced.

From the same table (4) above, there is a negative correlation between ROA and Tobin's Q of firms with coefficient of -0.626 at 1% significance level. Similarly, large firm size(Log_TA) and age (Log_Age) of the firm are equally associated with lower Tobin's Q, having coefficients of -0.158 and -0.020 respectively at 1% significance level. While size of the firm is statistically significant ($p = 0.000$), age of the firm is statistically insignificant ($p = 0.361$). Just like ROA, the fair value of stock options granted is negatively correlated with Tobin's Q of firms with coefficient of -0.301 at 1% significance level.

Finally, growth opportunities (SG) of firms is positively correlated with Tobin's Q with coefficient of 0.087 and is statistically significant with ($p < 0.01$). This is also an indication that, as firms have more opportunities to expand their operations, more sales are made which results in improvement in market-based performance measures of the firms. Based on the above evidence, it can be seen that all the other variables except growth opportunities have negative correlation with a firm's performance measured by Tobin's Q.

6.2 Regression analysis of the hypothesis test for ROA and Tobin's Q

Table 5. Regression results

Dependent variables:	ROA (A)	Tobin's Q (B)
Constant	-0.477** (0.000)	-54.834** (0.000)
ROA		-108.363** (0.000)
SG	-0.015** (0.000)	0.684 (0.068)
ΔOPTFVGR	0.321** (0.000)	-65.058** (0.000)
Log-age	0.021 (0.037)	4.767 (0.020)
Log-TA	0.078** (0.000)	5.541** (0.000)
Liquidity	-0.009** (0.001)	
LEVERAGE	-0.432** (0.000)	
N	2064	2064
R-Squared	0.651	0.444
Adjusted R-Squared	0.650	0.443
F-Statistic	640.253**	328.884**

N=number of observations, R-Squared=Extent of variation in dependent variables (ROA and Tobin's Q) explained by independent variables (ROA, SG, ΔOPTFVGR, Log-age, Log-TA, Liquidity and LEVERAGE), **=Significance of coefficient at 0.01 level

Beginning with column (A) of table 5, the results under column (A) above indicate that overall, the independent variables in formula 10 explain 65% of changes in Return on Assets (ROA). The F-statistic also shows that the model's independent variables is significant in predicting changes in the dependent variable with $p=0.000$. While other variables which have not been included in this study are accountable for 35% of the changes in a firm's Return on Assets, the independent variables which are changes in fair value of options granted, liquidity, firm age, firm size, growth opportunities and leverage (ΔOPTFVGR, LIQ, LOG_AGE, LOG_TA, SG and LEVERAGE), significantly represent the model used in this study. It can equally be

seen that, there is a significant positive impact of changes in fair value of options granted on Return on Assets with coefficient (b)=0.321 and p=0.000. Again, firms' liquidity had negative and significant impact on their performances measured by ROA with (b=-0.009, p=0.001). The total amount of assets at the disposal of firms also affects performances of those companies as larger firms are able to do better than smaller firms. Firm sizes represented by Log_TA has b=0.078 and p=0.000. Next is the leverage of the firms which also shows that, as firms reduce their gearing ratio, they are able to borrow more to embark upon value creating activities and this equally attracts investors and creditors to invest and sell on credit to those companies which enhances their performances. Leverage was expected to have a negative association with ROA and it equally shows a coefficient (b) of -0.432 and is statistically significant (p=0.000).

On the contrary, growth opportunities do not necessarily lead to increased ROA with b=-0.015 and p=0.000. This is equally not in accordance with what was predicted but is in consonance with a study by Margaretha and Supartika (2015) which indicated that growth opportunities impact profitability negatively. And so if profitability falls, then ROA will not necessarily rise.

Finally, old firms have also been confirmed not to suffer from organization inertia and rather stand better chance of recording higher performances than young or new ones. Age of the firm represented by Log_Age has (b=0.021) showing a positive impact on firm performance but is statistically insignificant at p=0.037. Based on the results of column (A) above, the regression model for ROA is fitted as follows:

$$ROA_{it} = -0.477 + 0.321(\Delta OPTFVGR) - 0.009(LIQ) + 0.078(Log_TA) - 0.432(LEVERAGE) - 0.015(SG) + 0.021(Log_Age)$$

The regression model above indicates that, out of the six independent variables, five have significant impact on performances of firms by way of ROA. These variables with the most significant impact on ROA are change in fair value of options granted ($\Delta OPTFVGR$), size of the firm (LOG_TA), leverage (LEVERAGE), age of the firm (Log_Age) and growth opportunities (SG).

Now to column (B) of table 5, the results under column (B) above indicates that, overall, the independent variables in formula 11 explain 44.40% of changes in Tobin's Q. Regardless of the lower percentage in comparison with that of ROA regression model, the F-statistic also shows that it is statistically significant. As such, while other variables which have not been included in this study are accountable for 55.60% of the changes in a firm's Tobin's Q, the independent variables included in this study which are Return on Assets, firm size, fair value of options granted, growth opportunities and age of the firm (ROA, Log_TA, Δ OPTFVGR, SG, LOG_AGE), significantly represent the model used in this study. Further, the results indicate that, higher Return on Assets (ROA) is associated with lower performance by way of Tobin's Q ($b=-108.363$) and is statistically significant ($p=0.000$). Of equally important is the growth opportunities of companies. Companies with more growth opportunities are able to perform well in terms of Tobin's Q which shows ($b=0.684$) but is statistically insignificant ($p=0.068$). Moreover, options granted affect firms' market-based performance negatively with ($b=-65.058$) and is statistically significant ($p=0.000$). The same cannot be said of the remaining two predictors which are age (Log_Age) of the firms and their sizes (Log_TA) with ($b=4.767$, $p=0.020$) and ($b=5.541$, $p=0.000$) respectively. These also show that, larger firms are able to perform better because they have more resources to carry out value adding investments and firms which have been in existence for long have learned enough from their past mistakes and are able to take prudent decisions leading to improved performances of such companies which is equally not a deviation from expectations. Based on the results of column (B) above, the regression model is fitted as follows:

$$TBQ = -54.834 - 65.058(\Delta OPTFVGR) + 0.684(SG) + 5.541 (LOG_TA) - 108.363(ROA) + 4.767(LOG_AGE)$$

Referring to the regression table and the model above, it can be clearly seen that, out of the five independent variables, the most significant variables affecting firms' Tobin's Q are the Return on Assets (ROA), fair value of options granted (Δ OPTFVGR), and firm size (LOG_TA) showing $b=-108.363$, $p=0.000$, $b=-65.058$, $p=0.000$ and $b=5.541$, $p=0.000$ respectively. The remaining two variables which are growth opportunities (SG) and firm age (Log_Age) are statistically insignificant.

7 CONCLUSION

This study was conducted to analyse how broad-based equity compensation affects performances of selected listed firms in the U.S. On one hand, two proxies were used for firm performances, namely Return on Assets (ROA) and Tobin's Q representing accounting and market-based performance measures respectively. On the other hand, fair value of stock options granted was used as proxy for broad-based equity compensation.

The results of the study supported one of the hypotheses while the other was not supported as far as the effect of stock options granted on firm performances is concerned. Fair value of stock options granted was found to have a positive impact on firms' accounting performances measured by ROA. This was in accordance with the expectations and was statistically significant. However, it is in contrast with the result of Frye (2004) which concluded, equity compensation rather had negative relationship with firm performance measured in terms of ROA. In the same vein, Sanders and Hambrick (2007) concluded that, granting of stock options lead to more losses in firms than gains. Their coefficient of losses recorded for ROA was found to be as twice as the gains made, hence companies record poor performances in terms of ROA when stock options are granted. Nonetheless, the result of this study is in agreement with several other studies. For example, Sesil, Kroumova, Kruse and Blasi (2000) found that broad-based equity compensation has a positive relationship with firm performances by way of ROA. Further, unlike Ikäheimo, Kjellman, Holmberg and Jussila (2004) who concluded that offering of stock options to employees lead to negative outcome where free rider problem was cited as a possible reason for this negative out-turn, this study agrees with Duffhues, Kabir, Mertens and Roosenboom (2002) who concluded that, granting stock options lead to increase in performances of companies by way of ROA for reasons such as ability to attract and retain qualified employees, accounting and tax purposes and the alignment of principal-agents interests. Similarly, Hochberg and Lindsey (2010), concluded that broad-based equity compensation does not lead to free rider problem due to mutual monitoring and that such compensation programmes lead to increase in adjusted ROA of firms. Also, this result concurs with the findings of Hillegeist and Penalva (2003) who found a positive association between firm performance in terms of ROA

and the amount of options held by both executives and non-executives in those organisations, indicating that as equity-based compensations are targeted at all and sundry, companies tend to do well using ROA as accounting-based performance indicator. Finally, this provides evidence that firm performance by way of ROA will not only improve when equity compensation is targeted at executives only (Mehran, 1995) but also when it is broad-based.

On the other hand, fair value of stock options was found to have a negative impact on market-based performances of firms measured by Tobin's Q. This outcome is in contrast with expectations but is consistent with previous studies such as Liljeblom, Pasternack and Rosenberg (2010) who concluded that, the negative association between stock options granted and the performances of companies in terms of Tobin's Q is as a result of the fact that, poor performing companies are the ones that tend to issue more stock options. It also shows that, when companies' market-based performance is falling, they issue stock options as a means of addressing the agent-principal problem by making agents part owners to avoid further decline of market-based performances. Also, Pasternack and Rosenberg (2003) found that, the amount of equity ownership which is as a result of stock options granted is negatively related to Tobin's Q which also indicates that, though the determinants of broad-based stock options and those targeted at specific group differ, the Tobin's Q does not increase as a result of adoption of stock options. Also, Faleye, Mehrotra and Morck (2005) recorded a rather significant decline in shareholder value measured by Tobin's Q when employees in general are given a voice in corporate governance affairs through stock options indicating negative relationship between such compensation programmes and firm performances.

Kim and Ouimet (2014) concluded that, when organisation adopts broad-based equity compensation, because a lot of employees are benefiting from the scheme, it results in free rider problem and further argues that such programmes are for purposes such as avoidance of takeovers by building strong alliance between management and employees and not necessarily for the alignment of principal and agent interests. On this note, we conclude that firm performances rather decline in terms of Tobin's Q when broad-based equity compensations are implemented due to factors such as building of alliances between management and employees, free rider

problems and the use of stock options for purposes other than market-based performance improvements.

Referring to the regression result, apart from stock options, other firm characteristics were found to have significant impact on firm performances. Notable among these characteristics is the size of the firm. The firm size showed consistent results for the two dependent variables. The result for ROA is in accordance with expectations because the more assets a firm has, the more the firm can take advantage of investment opportunities to increase its productivity and higher productivity leads to improved profitability and enhanced ROA. This result is in line with previous studies such as Diaz and Hindro (2017). Not only are firms found to improve their accounting-based performance on the basis of their size, but their market-based performances also increased and was equally significant just like the accounting-based performances as can be seen from the regression results. Firm leverage was equally found to have a significant impact on performances in terms of ROA. The negative association between leverage and ROA indicates that, as firms' leverage falls, they are able to have room to borrow more money if needed to carry out more value adding activities. This result is consistent with Simerly and Li (2000) and Omondi and Muturi (2013). This also supports the view that, leverage affects liquidity of firms as the two are inversely correlated as can be seen from the correlation results. As such, as leverage falls, it is an indication of increasing liquidity and this will affect ROA positively (Mayasari, 2012). Consequently, firms' liquidity was also found to have a positive and significant correlation with the ROA which is also consistent with Diaz and Hindro (2017) that, as firms have more cash and cash equivalents available, they are able to generate profit and increased profitability will lead to improvement in ROA. There were contrasting results with regards to how growth opportunities affect market-based performance and accounting-based performance measures. Whereas more growth opportunities are associated with significant improvement in market-based performances of companies, it rather had negative impact on accounting-based performances. The result of the market-based performance was according to expectation but that of accounting-based performance was contrary to expectations. Regardless of the contrary finding, it was in line with empirical evidence indicating that, as growth opportunities increase, more stock options are granted but will not necessarily translate into improved financial

performances (Gaver &Gaver 1993, Kwon &Yin 2006, Smith Jr &Watts 1992). ROA was found to have a significant negative impact on Tobin's Q which contradicts the findings made by Alghifari,Triharjono and Juhaeni (2013). The age of firms was found to impact positively on both the market-based and accounting-based performances of the companies but were both insignificant. This contradicts a number of research results such as Loderer and Waelchli (2009) and Deitiana and Habibuw (2015) who found that organisational performances worsen with age due to factors such as obsolescence, rigidity and rent-seeking behaviour. Nonetheless, our result concurs with the findings of Omondi and Muturi (2013) who found a positive impact of firm age on firm performances which is a demonstration that, old age comes with more experience, improved efficiency and overall organisational performance.

From ROA point of view, the results of this study disagrees with those who have argued that offering broad-based compensation programmes will not lead to increased firm performances based on theories such as free rider problem (Oyer,2004), psychological expectancy theory (Vroom,1995), accounting myopia (Hall and Murphy, 2003) and worker-management alliance theory (Kim & Ouimet, 2014; Pagano & Volpin,2005). On the basis of these findings, we accept hypothesis one that, there is positive relationship between broad-based equity compensation and ROA of U.S listed companies. Consequently, we conclude that, equity-based compensation leads to significant increase in ROA of companies and that agency problem seems to be solved if a firm adopts broad-based equity compensation to improve upon its accounting-based performance by using ROA as an indicator. Again, on the basis of ROA, scholars such as Morishima (1988), Holmström and Milgrom (1991) and Hochberg and Lindsey (2010),who espouse theories like reduction of information asymmetry, mutual monitoring and enhancement of efficiency wage theory and promotion of risk sharing between principal and agent due to implementation of broad-based equity compensation stand vindicated by this result. On the contrary, if the company uses market-based performance measure to assess its performance, the result agrees with those who have held the view that offering broad-based compensation programmes will not lead to increased firm performances based on theories such as free rider problem (Oyer,2004), psychological expectancy theory (Vroom,1995), accounting myopia (Hall and

Murphy, 2003) and worker-management alliance theory (Kim & Ouimet, 2014; Pagano & Volpin, 2005). The Tobin's Q result also confirms the reasons for the rejection of stock option plans by shareholders in the U.S due to the extent to which it dwindles returns on companies' market value (Randal & Kenneth, 2000). Similarly, it lends credence to the statement that "companies are far less likely to think that their stock option program has a positive effect on their business results than any other kind of variable pay program" (Hewitt 1997:1). This is because, the agency problem will not be solved and will also serve as an indication of non-existence of efficient contracting. Consequently, we reject hypothesis two that there is positive relationship between broad-based equity compensation and Tobin's Q of U.S listed companies. This also shows that, stakeholder maximisation theory by Freeman (1984) will equally not be met. As indicated by Hillegeist and Penalva (2003), this study has also confirmed that, apart from stock options compensation, other firm characteristics such as firm size, leverage, liquidity, growth opportunities and firm age can equally affect performances of firms as the above discussion proves the accuracy of most of the five predictions made.

This research, like any other study was not without limitations. First and foremost is the choice of fair value of stock options as proxy for broad-based equity compensation. This decision was arrived at due to accuracy challenges of hand collecting the broad-based equity compensation data. Though stock options are very popular as far as equity compensation is concerned, it is not the only type available. The study also adopted ROA and Tobin's Q as firm performance proxies, but obviously there are other equally important indicators of firm performances as already indicated in the theories under chapter five. Further, a variable such as the growth opportunities, has other equally potent substitutes. Also, other variables such as liquidity, leverage, ROA as accounting ratios have alternative ways of calculation depending on the company and industry. And considering the fact that, the data came from different industries, it cannot be one-size-fits-all as those ratios can be calculated in different ways. Again, the sample period is relatively short as such the result may change if a longer sample period is covered. Finally, this study did not include data from other equity-based compensations such as restricted stock, stock appreciation, warrants among others. In spite of the above limitations, this study has also contributed to the already existing debate on the effects to broad-based equity

compensation on firm performances, particularly, when ROA and Tobin's Q are used as performance indicators.

REFERENCES

- Aboody, D. (1996). Market valuation of employee stock options. *Journal of Accounting and Economics*, 22(1-3), 357-391.
- Adams, J.S. (1963). Toward an understanding of inequity. *Journal of Abnormal Psychology*, 67(5), 422-436.
- Agrawal, A., & Knoeber, C. R. (1996). Firm performance and mechanisms to control agency problems between managers and shareholders. *Journal of Financial and Quantitative Analysis*, 31(3), 377-397.
- Alghifari, E.S., Triharjono, S., & Juhaeni, Y.S. (2013). Effect of Return on Assets against Tobin's Q: Studies in food and beverage company in Indonesia stock exchange years 2007-2011. *International Journal of Science and Research*, 2(1), 722-725
- Aliaga, M. & Gunderson, B. (2002) *Interactive Statistics*. Thousand Oaks: Sage Publications.
- Al-Matari, E. M., Al-Swidi, A. K. & Fadzil, F. H. (2014). The measurements of firm performance's dimensions. *Asian Journal of Finance & Accounting*, 6(1), 26-27, 33
- Barth, M.E., Cram. D.P. & Nelson, K.N. (2001). Accruals and the prediction of future cash flows. *The Accounting Review*, 76(1), 27-58.
- Bartlett, R.P. & Partnoy, F. (2018). *The Misuse of Tobin's Q*. UC Berkeley Public Law Research Paper. Retrieved from: <https://ssrn.com/abstract=3118020>
- Basu, S., Hwang, L. S., Mitsudome, T., & Weintrop, J. (2007). Corporate governance, top executive compensation and firm performance in Japan. *Pacific-Basin Finance Journal*, 15(1), 56-79.

Berle, A.A. (1927). Convertible bonds and stock purchase warrants. *Yale law journal* 36(5). Retrieved from: <http://digitalcommons.law.yale.edu/ylj/vol36/iss5/4>

Berle, A.A. & Means, G.C. (1932). *The Modern Corporation and Private Property*. New York: Macmillan company.

Bhagat, S., Brickley, J.A. & Lease, R.C. (1984). Incentive effects of stock purchase plans. *Journal of Financial Economics*, 14(2), 195-215

Bharath, S.T., Sunder, J. & Sunder, S.V.J. (2008). Accounting quality and debt contracting. *Accounting Review*, 83(1): 1-28

Bierce, W. (2017). Employee Incentive Compensation for American Growth Businesses: A Primer. Bierce & Kenerson, P.C. Retrieved from: www.biercekenerson.com. <http://www.biercekenerson.com/wp-content/uploads/2017/04/2017>.

Black, G. (2009). *Introduction to Accounting and Finance* (2nd Ed). Harlow: Financial Times/ Prentice Hall.

Blasi J, Kruse D, Sesil J & Kroumova M (2000). *Public companies with broad-based stock options: Corporate performance from 1992-1997* (NCEO Working paper, 2000). Retrieved from: https://www.nceo.org/assets/pdf/articles/public_cos_broad_options.pdf

Brick, I. E., Palmon, O., & Wald, J. K. (2006). CEO compensation, director compensation, and firm performance: Evidence of cronyism? *Journal of Corporate Finance*, 12(3), 403-423.

Cameron, K. (1986). A study of organizational effectiveness and its predictors. *Management Science*, 32(1), 87-112

Carey, K.J. (1974). Persistence of profitability. *Financial Management*, 3(2), 43-48.

Carlin, T.M. & Ford, G. (2005). *Empirical Evidence of the Use Size and*

Cost of Executive Options Schemes in Australia (MGSM Working Paper No. 2005-16). Retrieved from <http://ssrn.com/abstract=842704>.

Choi, S.J. & Fisch, J.E. (2008). On Beyond CalPERS: Survey evidence on the developing role of public pension funds in corporate governance. *Vanderbilt Law Review*, 61(2), 314-354.

Chung, K.H. & Pruitt, S.W. (1994). A simple approximation of Tobin's q. *Financial Management*, 23(3), 70-74.

Clarkson, M.B.E. (1995). A stakeholder framework for analyzing and evaluating corporate social performance. *The Academy of Management Review*, 20(1), 92-117.

Coffee, Jr., J. C. (2003). *What Caused Enron?: A capsule social and economic history of the 1990s* (Columbia Law and Economics Working Paper No. 214). Retrieved from https://scholarship.law.columbia.edu/cgi/viewcontent.cgi?article=1582&context=faculty_scholarship

Combs, J.G., Crook, T. R. & Shook, C.L. (2005). *The dimension of organizational performance and its implications for strategic management research*. In D. J. Ketchen & D. D. Bergh (Eds.), *Research methodology in strategy and management* (pp. 259-286). San Diego: Elsevier.

Core, J. E. & Guay, W. R. (2001). Stock option plans for non-executive employees. *Journal of Financial Economics*, 61(2), 253-287.

Core, J.E., Guay, W.R. & Larcker, D.F. (2003). Executive equity compensation and incentives: A survey. *Economic policy review*, 9(1), 27-50

Core, J.E., Holthausen, R.W. & Larcker, D.F. (1999). Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics*, (51), 371-406.

Coughlan, A.T. & Schmidt, R.M. (1985). Executive Compensation,

Management Turnover, and Firm Performance: An Empirical Investigation.
Journal of Accounting and Economics, 7(1-3), 43-66.

Creswell, J.W. (2013). *Qualitative inquiry and research design: Choosing among five traditions* (3rd ed). Thousand Oaks, CA: Sage Publications.

Creswell, J.W. & Plano Clark, V.L. (2007). *Designing and conducting mixed methods research*. Thousand Oaks, CA: Sage Publications

Damodaran, A. (2005). *Employee Stock Options (ESOPS) and Restricted Stock: Valuation Effects and Consequences* (SSRN working paper No. 841504). Retrieved from <http://ssrn.com/abstract=841504>.

Dechow, P. M. (1994). Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals. *Journal of Accounting and Economics* 18(1), 3-42.

DeFusco, R.A., Johnson, R.R. & Zorn, S.T. (1990). The effect of executive stock option plans on stockholders and bondholders. *Journal of Finance* , 45(2), 617-627.

Deloof, M. (2003). Does working capital management affect profitability of Belgian firms? *Journal of Business Finance and Accounting*, 30(3- 4), 573-588.

Deitiana, T., & Habibuw, G.L. (2015). Factors affecting the financial performance of property and real estate companies listed at the Indonesia stock exchange. *Asian Business Review*, 5(11), 79-88

Deloitte & Touche LLP (2018). A roadmap to accounting for share-based payment awards. A publication in Deloitte's roadmap series. Retrieved from: <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/audit/ASC/Roadmaps/us-aers-a-roadmap-to-accounting-for-share-based-payment-awards.pdf>.

Demirhan, H. G., & Anwar, W. (2014). Factors affecting the financial performance of the firms during the financial crisis: Evidence from Turkey. *Ege Strategic Research Journal*, 5(1), 65-80

Demsetz, H. & Lehn, K. (1985). The structure of corporate ownership: Causes and consequences, *Journal of Political Economy* 93(6), 1155-1171.

Diaz, J.F.T. & Hindro, M.C.T. (2017). Factors affecting the profitability of Indonesian real estate publicly-listed companies. *Asian Journal of Finance and Accounting*, 9(1), 396-428

Dobbin, F. & Zorn, D. (2005). Corporate malfeasance and the myth of shareholder value. *Political Power and Social Theory*, (17), 179-198

Donaldson, T. & Preston, L. E. (1995). The stakeholder theory of the corporation: concepts, evidence and implications. *Academy of Management Review*, 20(1), 65-91.

Duffhues, P., & Kabir, R. (2008). Is the pay-performance relationship always positive? Evidence from the Netherlands. *Journal of Multinational Financial Management*, 18, 45-60.

Duffhues, P. J. W., Kabir, M. R., Mertens, G. M. H., & Roosenboom, P. G. J. (2002). *Employee stock option grants and firm performance in the Netherlands*. In J. McCahery, P. W. Moerland, T. Raaijmakers, & L. D. R. Renneboog (Eds.), *Convergence and diversity of corporate governance regimes and capital markets* (pp. 668-678). Oxford: Oxford University Press.

Dyer, L., & Blancero, D. (1992). *Workplace 2000: A Delphi-Study* (CAHRS Working Paper #92-10). Ithaca, NY: Cornell University, School of Industrial and Labor Relations, Center for Advanced Human Resource Studies. Retrieved from: <http://digitalcommons.ilr.cornell.edu/cahrswp/294>

Eisenhardt, K.M. (1988). Agency and institutional theory explanations: The case of the retail sales compensation. *Academy of Management Journal*, 31 (3), 488 - 511.

Elayan, F. A., Lau, J. S. C. & Meyer, T. O. (2003). Executive incentive compensation schemes and their impact on corporate performance: *Studies in Economics and Finance*, 21(1),59-92

Enqvist, J., Graham, M., & Nikkinen, J. (2014). The impact of working capital management on firm profitability in different business cycles: Evidence from Finland. *Research in International Business and Finance*, 32, 36-49.

Faleye, O., Mehrotra, V.& Morck, R. (2005). *When labor has voice in corporate governance* (Working paper No.11254). Retrieved from: <https://www.nber.org/papers/w11254>

Fama, E.F. & Jensen, M.C. (1983). Separation of ownership and control. *Journal of Law and Economics*, 26(2), 301-325.

Fang, V.W., Noe, T.H. & Tice, S. (2009). Stock market liquidity and firm value. *Journal of Financial Economics*, 94(1), 150-169.

Fisher, F.M. & McGowan. J.J. (1983). On the Misuse of Accounting Rates of Return to Infer Monopoly Profits. *The American Economic Review*,73(1), 82-97

Freeman, R.E. (1984). *Strategic management: A stakeholders approach*. Boston: Pitman.

Frye, M.B. (2004). Equity-based compensation for employees: Firm performance and determinants. *The journal of financial research*, 27(1),31-54

Fryman, C. & Jenter, D. (2010). *CEO compensation*. Rock center for corporate governnnance at Stanford University (Working Paper No. 77). Retrieved from :<https://ssrn.com/abstract=1582232>

García-Teruel, P. J., & Martínez-Solano, P. (2007). Effects of working capital management on SME profitability. *International Journal of Managerial Finance*, 3(2), 164-177.

Gaver, J. J. & Gaver, K. M. (1993). Additional evidence on the association between the investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of Accounting and Economics* 16(1), 125-160.

Gerhart, B. (2000). *Compensation strategy and organizational performance*. In S. Rynes and B. Gerhart, (Eds.) *Compensation in organizations* (pp. 151-194). San Francisco, CA: JosseyBass Inc.

Gerhart, B., Minkoff, H. B. & Olsen, R. N. (1995). *Employee compensation: Theory, practice, and evidence* (CAHRS Working Paper No.95-04). Cornell University, School of Industrial and Labor Relations, Center for Advanced Human Resource Studies. Retrieved from: <http://digitalcommons.ilr.cornell.edu/cahrswp/194>

Gordon, J.N. (2007). The rise of independent directors in the United States, 1950-2005: Of shareholder value and stock market prices. *Stanford Law Review*, 59(6), 1465-1568.

Hagel, J., Brown, S. J., Samoylova, T. & Lui, M, (2013). Success or struggle: ROA as a true measure of business performance. *Deloitte University Press*, 4-18

Hall, B.J. (2003). Six Challenges in Designing Equity-Based Pay. *Journal of Applied Corporate Finance*, 15(3), 21-33

Hall, B.J. & Murphy, J. K. (2003). The Trouble with Stock Options. *Journal of Economic Perspectives*, 17(3), 49-70

Hewitt Associates. (1997). *Non-executive stock option survey report*. Variable compensation measurement database. Lincolnshire, Illinois: VCM Points Program.

Hillegeist, S. A. & Penalva, F. (2003). *Stock Option Incentives and Firm Performance* (SSRN Working Paper No. 480384). Retrieved from <http://ssrn.com/abstract=480384>

Hochberg, Y.V.& Lindsey, L. (2010). Incentives, targeting, and firm performance: An analysis of non-executive stock options. *Review of Financial Studies*, 23(11), 4148–4186.

Højen, V.M. (2007). Equity-based compensation and firm performance (Master's thesis). Retrieved from: <http://pure.au.dk/portal/files/1485/000155261-155261.pdf>

Hollister, H. T. (2005). Shock Therapy for Aktiengesellschaften: Can the Sarbanes-Oxley certification requirements transform German corporate culture, practice and prospects?, *Northwestern Journal of International Law & Business*, 25(2), 453-484.

Ikäheimo, S., Kjellman, A., Holmberg, J. & Jussila, S. (2004). Employee stock option plans and stock market reaction: Evidence from Finland . *The European Journal of Finance*, 10(2), 105-122.

Internal Revenue Service (2014). *Topic 427 - Stock options*. Retrieved from <http://www.irs.gov/taxtopics/tc427.html>

Internal Revenue Service (2015). *Equity stock-based compensation audit techniques guide*. Retrieved from: <https://www.irs.gov/businesses/corporations/equity-stock-based-compensation-audit-techniques-guide>

Ittner, C.D.Lambert, R.A. & Larker, D.F. (2003). The structure and performance consequences of equity grants to employees of new economy firms. *Journal of Accounting and Economics*, 34 (1-3), 89-127

Jackson, G. (2010). *Understanding corporate governance in the United States: An historical and theoretical reassessment*. (Working paper No. 223). Retrieved from: https://www.boeckler.de/pdf/p_arbp_223.pdf

Jensen, M.C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review*, 76(2), 323-329.

Jensen, M. & Murphy, K.J.(1990a). Performance Pay and Top Management Incentives. *Journal of Political Economy*, 98(2), 225–63.

Jensen, M.C. & Murphy, K. J. (2004b). *Remuneration: Where we've been, how we got to here, what are the problems, and how to fix them* (ECGI-Finance working Papers 44/2004). Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=561305

Jensen, M.C. & Meckling, W.H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360.

Jensen, M.C., Murphy, K.J. & Wruck, E.G.(2004). *Remuneration: Where We've Been, How We Got to Here, What are the Problems, and How to Fix Them* (Harvard NOM Working Paper No. 04-28; ECGI - Finance Working Paper No. 44/2004). Retrieved from : <https://ssrn.com/abstract=561305>

Johnson, R.D.A. & Greening, D.W. (1999). The effects of corporate governance and institutional ownership types on corporate social performance. *Academy of Management Journal* 42(5), 564-576.

Jose, ML, Lancaster, C. & Stevens, J.L. (1996). Corporate returns and cash conversion cycles. *Journal of Economics and finance*, 20(1), 33-46

Kandel, E. & Lazear, E. (1992). Peer pressure and partnerships. *Journal of Political Economy*, 100(4), 801-817.

Kanter, R. M. (1978). Men and women of the corporation, New York, Basic Books, 'Workin in a new America', *Daedalus. Journal of the American Academy of the Arts and Science*, (107),47-48.

Kaplan, R.S. & Norton, D.P. (1992). The balanced scorecard – measures that drive performance. *Harvard Business Review*, 70 (1), 71-79.

Kebewar, M. (2013). Does debt affect profitability? *An empirical study of French trade sector. An Empirical Study of French Trade Sector*. (MPRA Paper No.43968).Retrieved from: https://mpra.ub.uni-muenchen.de/43968/1/Does_debt_affect_profitability_An_empirical_study_of_French_trade_sector.pdf

Keown, A. J., Martin, J. D. & Petty, J. W. (2011). *Foundations of finance (7th Ed.)*. *The Logic and Practice of Financial Management*. Boston: Prentice Hall.

Kiel, G.C. & Nicholson, G.J. (2003). Board composition and corporate performance: How the Australian experience informs contrasting theories of corporate governance. *Corporate governance: An International Review*, 11(3), 189-205.

Kim, E.H.& Ouimet, P. (2014). Broad-based employee stock ownership: Motives and outcomes. *The Journal of Finance*,69(3),1273-1319

Koch, M.J. & McGrath, R.G. (1996). Improving labor productivity: Human resource management policies do matter. *Strategic Management Journal*,17, 335-354.

KPMG, (2018). *Accounting for share warrants. Accounting and auditing update*. (Research paper number 23/2018). Retrieved from: <https://home.kpmg/content/dam/kpmg/in/pdf/2018/06/AAU-June2018-Chapter3.pdf>

Kuo, C. S., Li, M. L., & Yu, S. E. (2013). Non-uniform effects of CEO equity-based compensation on firm performance – An application of a panel threshold regression model. *The British Accounting Review*, 45, 203-214.

Kwon, S. S. & Yin, Q. J. (2006). Executive compensation, investment opportunities, and earnings management: High-tech firms versus low-tech firms. *Journal of Accounting, Auditing and Finance*, 21(2), 119-148.

Lambert, R.A., & Larcker, D.F. (1989). *Executive compensation, corporate decision-making, and shareholder wealth*. In F. Foulkes (Ed.), *Executive compensation* (pp. 287-309). Boston: Harvard Business School Press.

Larcker, D.F. (1983). The association between performance plan adoption and corporate capital investment. *Journal of Accounting & Economics*, 5(1), 3-30

Lawler, E., Mohrman, S.A., & Ledford, G.E. Jr. (1998). *Strategies for high performance organizations: Employee involvement, TQM, and reengineering programs in fortune 1000 corporations*. San Francisco, Ca.: Jossey-Bass.

Lebow, D., Sheiner, L. Slifman, L. & Starr-McCluer, M. (1999). *Recent Trends in Compensation Practices*. USA Federal Reserve Board: Washington, DC.

Liargovas, P., & Skandalis, K. (2008). *Factor affecting firms financial performance : The Case of Greece*. Athens: University of Peloponnese Press.

Liljeblom, E., Pasternack, D., & Rosenberg, M. (2011). What determines stock option contract design? *Journal of Financial Economics*, 102(2), 293-316.

Loderer, C., Neusser, K., & Waelchli, U. (2009). *Firm age and performance*. (GEABA Discussion paper No.09-18). Retrieved from: <http://www.geaba.de/wp-content/uploads/2017/07/DP-09-18.pdf>

Mace, M.L. (1971). *Directors myth and reality*. Division of research, graduate school of Business Administration. Boston: Harvard University press.

Margaretha, F., & Supartika, N. (2015). Factors affecting profitability of small medium enterprises (SMEs) firm listed in Indonesia stock exchange. *Journal of Economics, Business and Management*, 4(2), 132-137

Matolcsy, Z., Shan, Y., & Seethamraju, V. (2012). The timing of changes in CEO compensation from cash bonus to equity-based compensation: Determinants and

performance consequences. *Journal of Contemporary Accounting & Economics*, 8(2), 78-91.

Mayasari, E. Y. (2012). Study of profitability in real estate and property companies in Indonesia stock exchange. *Accounting Analysis Journal*, 1(2), 1-6.

Mehdi, B. & Imen, G.M. (2014). The determinants of equity-based compensation: A bidimensional validity of the agency theory. *Asian academy of management journal of accounting and finance*, 10(2), 117-145

Mehran, H. (1995). Executive compensation structure, ownership, and firm performance. *Journal of financial economics*, 38(2), 163-184.

Mian, S.L. & Smith, C.W. (1990). Incentives associated with changes in consolidated reporting requirements. *Journal of Accounting and Economics*, 13(3), 249-266

Milkovich, G. & Newman, J. (2002). *Compensation* (7th ed). New York: McGraw-Hill Irwin

Miller, J.D. (1970). *A theoretical and empirical study of stock purchase warrants convertible bonds* (Doctoral Dissertation). Retrieved from: https://digitalcommons.lsu.edu/cgi/viewcontent.cgi?article=2793&context=gradschool_disstheses

Miller, T. (2012). *Phantom stock: The ideal plan for growing private companies*. Executive white paper. Retrieved from: <http://cdn2.hubspot.net/hub/436298/file-2343957457-pdf>

Mitchell, R.K., Agle, B.R. & Wood, D.J. (1997). Toward a theory of stakeholder identification and salience: defining the principle of who and what really counts. *Academy of Management Review*, 22(4), 853-886.

Modigliani, F., & Miller, M. H. (1963). Corporate income taxes and the cost of capital: A correction. *The American Economic Review*, 53(3), 433-443.

Morgenson, G. (1998, May 18). Stock options are not a free lunch, *Forbes magazine*, p.212-217

Morishima M. (1988). *Information sharing and firm performance in Japan: Do joint consultation committees help?*, Simon Fraser University (Working paper). British Columbia

Muijs,D. (2004). *Doing quantitative research in education with SPSS*. London:Sage Publications.

Mullins, J. M. (2010). *Management and organisaitonal behavior* (9th ed). Harlow:Prentice Hall.

Murphy, K.J. (2002). Explaining executive compensation: managerial power versus the perceived cost of stock options. *University of Chicago Law Review*, 69(3), 847-69

Myers, S.C. (1977). Determinants of corporate borrowing. *Journal of Financial Economics*, 5(2), 147-175.

Neely, A. Gregory, M. & Platts, K. (2005). Performance measurement system design: A literature review and research agenda. *International Journal of Operations & Production Management*, 25(12), 1128–1263.

Ofek, E.& Yermack,D.(2000). Taking stock: Equity-based compensation and the evolution of managerial ownership. *The journal of Finance*, 55 (3),1367-1384

Omondi, M.M.& Muturi, W. (2013). Factors affecting the financial performance of listed companies at the Nairobi securities exchange in Kenya. *Research journal of finance and accounting*,4(15),99-104

Oyer, P. (2004). "Why Do Firms Use Incentives That Have No Incentive Effects?" *Journal of Finance*, 59, 1619-1641.

Oyer, P. & Schaefer, S. (2006). Cost of broad-based stock option plans. *Journal of financial intermediation*, 15 (4), 511-534

Pagano, M. & Volpin, P.F (2005). Managers, workers, and corporate control. *Journal of Finance*, 60, 841–868.

Pandey, P.K. (2017). Return on Assets and Its Decomposition into Operating and Non-Operating Segments. *International Journal of Latest Engineering and Management Research*, 2(9),22-31

Pasternack, D., & Rosenberg,M. (2003). *What determines stock option contract design? Swedish School of Economics and Business Administration*. (Working Paper No. 498). Retrieved from : <https://helda.helsinki.fi/bitstream/handle/10227/270/498-951-555-808-5.pdf?sequence=1>

Randall, S. T. & Kenneth, J. M. (2000). *The determinants of shareholder voting on stock option plans*.35 Wake forest law review. Retrieved from: <https://scholarship.law.vanderbilt.edu/faculty-publications/990>

Rosenberg, M. (2003). *Stock option compensation in Finland: An analysis of economic determinants, contracting, frequency, and design*. (Swedish School of Economics and Business Administration Research Paper No. 126). Retrieved from: <https://helda.helsinki.fi/bitstream/handle/10227/98/126-951-555-827-1.pdf?sequence=2>

Ross, S.A. (1973). The economic theory of agency: The principal's problems. *American Economic Review*, 63(2),134-139

Sanders, W.M.G & Hambrick D.C. (2007). Swinging for the Fences: The effects of CEO stock options on company risk taking and performance. *Academy of management journal*,50(5),1055-1078

- Santos, J.B. & Brito, L.A.L. (2012). Toward a subjective measurement model for firm performance. *Brazilian Administrative Review*, 9(6),95-117
- Saunders, M., Lewis, P. & Thornhill, A. (2009). *Research methods for business students* (5th ed).Harlow:Pearson Education.
- Schmidgall, R. S. (2006). *Hospitality industry managerial accounting* (6th ed.). East Lansing, MI: Educational Institute of the American Hotel & Motel Association.
- Schubert, W. & Barenbaum, L. (2008). Equity-based executive compensation. *Journal of Leadership, Accountability and Ethics*. pp. 28-40.
- Scot, R.W. (2015). *Financial Accounting Theory* (7th ed). Toronto:Pearson Education.
- Senbet, L.W. (2011). *The rise of equity-based compensation: The good and the dark, 25/25: Observations on the past, present, and future of corporate governance* (in celebration of the 25th anniversary of Institutional Shareholders Services (ISS)) pp. 32-34. Retrieved from: https://www.issgovernance.com/file/files/ISS_25for25.pdf
- Sesil, J. C., Kroumova, M.K.,Kruse, D.L. & Blasi, J.R. (2007). Broad-based employee stock options in the U.S: Company performance and characteristics. *Journal of management revue*, 18(1),5-22
- Shin, H. H., & Soenen, L. (1998). Efficiency of working capital management and corporate profitability. *Financial Practice and Education*, 8(2), 37-45.
- Shleifer. A. & Vishny, R. (1986). Large shareholders and corporate control. *Journal of Political Economy*, 94(3), 461–88.
- Shin, H., Stulz, R.M. (2000). *Firm value, risk and growth opportunities*. (NBER Working Paper No.7808). Retrieved from: <https://www.nber.org/papers/w7808.pdf>

Simerly, R., & Li, M. (2000). Environmental dynamism, financial leverage and performance: A theoretical integration and an empirical test. *Strategic Management Journal*, 21(1), 31-49.

Smith Jr, C. W. & Watts, R. L. (1992). The investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of Financial Economics* 32(3), 263-292.

Sorensen, B., & Stuart, E. (2000). Age, Obsolescence, and Organizational Innovation. *Academy of Management Journal*, 25(6), 121 - 132.

Trochim, W.M.K. (2006). *Research methods knowledge base*. Retrieved from: <http://www.socialresearchmethods.net>

Vroom, V. H. (1995). *Work and Motivation*. (Revised edition). San Francisco: Jossey-Bass Publishers.

Waddock, S.A. & Graves, S.B. (1997). The corporate social performance-financial performance link. *Strategic Management Journal*, 18(4), 303-319

Wallin, J. M., Schalla, S.S. & Apellman, C.B. (2015). *Thomson Reuters. Start-up equity awards: securities law considerations*. Retrieved from: <http://joewallin.com/wp-content/uploads/2015/07/Start-up-Equity-Awards-Securities-Law-Considerations-3-610-2005-3.pdf>

Watson Wyatt Worldwide (1998). *Stock Option Overhang: Shareholder Boon or Shareholder Burden?* Watson Wyatt Worldwide: Bethesda, MD.

Weitzman, M.L. (1995). *Incentive effects of profit sharing* (Harvard University working paper). Retrieved from: <https://scholar.harvard.edu/files/weitzman/files/incentiveeffectspprofitsharing.pdf>

Weitzman, M.L., & Kruse, D.L. (1990). *Profit sharing and productivity*. In:Blinder AS Paying for productivity: A look at the evidence. Washington, D.C.: Brookings Institution.

Welles, E. O. (1998). Motherhood, apple pie stock options. *The magazine for growing companies*, (20), 84-97.

Williamson, O. (1964). *The economics of discretionary behavior: Managerial objectives in a theory of the firm*. New Jersey: Prentice Hall.

Wolfe, J. & Sauaia A.C.A. (2005). The Tobin's q as a company performance indicator. *Journal of simulation and gaming*,36(2),238-249

Wright, A. & Matolcsy, Z. (2011). CEO compensation structure and firm performance. *Accounting and Finance*, 51(3),745-763

Yermack,D.(1995a). Do corporations award CEO stock options effectively? *Journal of Financial Economics*,39(2-3),237-269

Yermack, D. (1997b). Good Timing: CEO stock option awards and company news announcements. *Journal of Finance*, 52(2),449-76